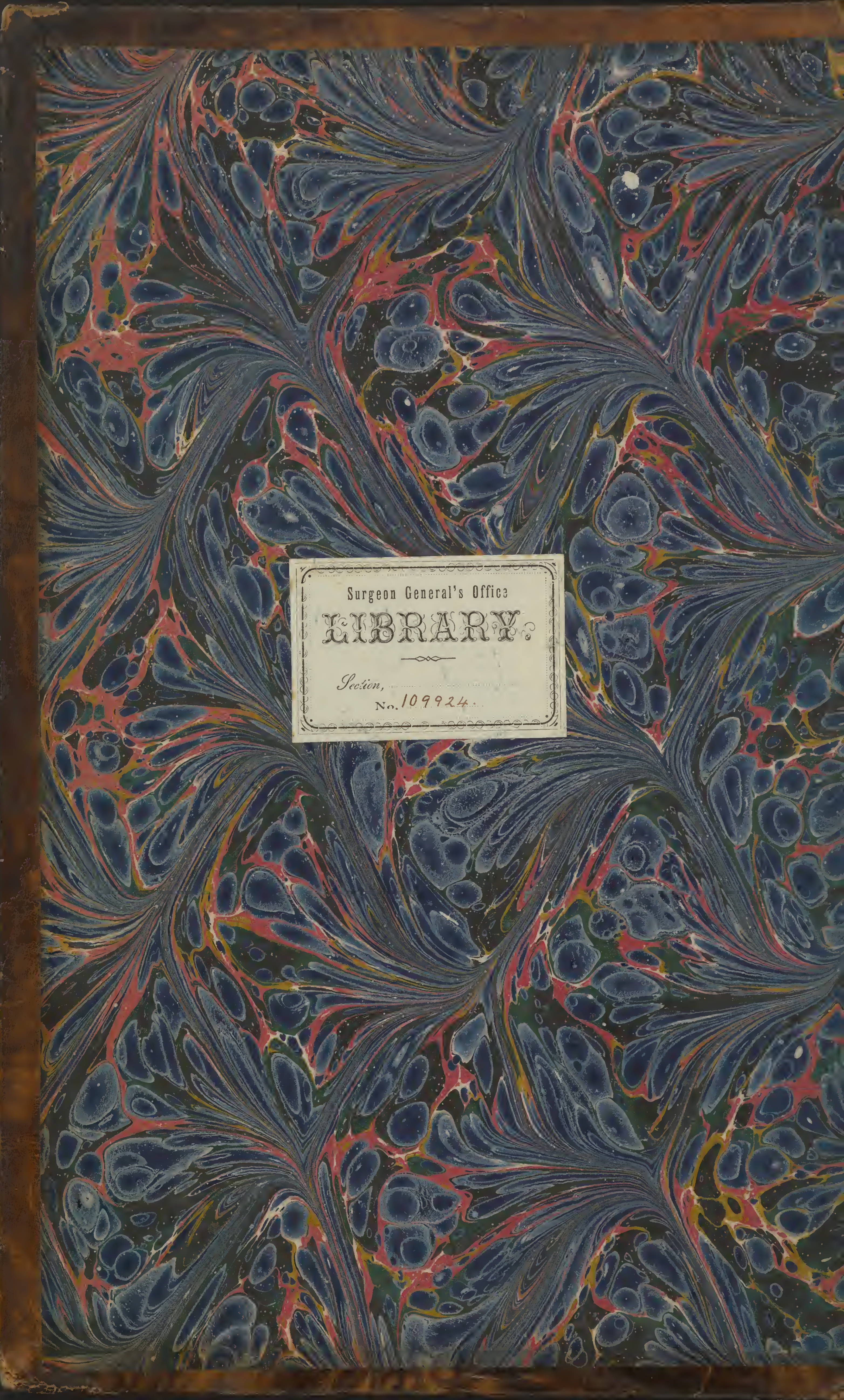

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36 Berkeley Square W
28 Dec^r 1860

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Dear Mr Wells

I am deeply touched by your considerate kindness in thinking of writing a little memorial of my precious Father — I had in my heart & very much wished it but had known of no one to ask to do it, and therefore had not mentioned it to anyone

My Aunt Madame de Wahl (papa's twin sister) much wishes that you would kindly have 20 little copies or so of what you have already sent me and what will be written printed off for us - if it is not giving you inconvenience. It is indeed a happy satisfaction to us to know (as we have often heard) how deeply my darling Father was respected and beloved by all - he was so *good* and *true* a friend to all -

One *cannot* wish him back Mr Wills though it seems hard at first to part and be left behind - the burthen of

such grief does seem almost
overwhelming it comes with such
a ~~[illegible]~~ crushing stunning force that
it seems almost to be overwhelming
Bless him he is *so* happy J.
I cannot write more – dear Mr
Wills, thanks are but stupid
little things, but such as they
are in *his* name take mine
I know your kindness came
from your true friendship
and love to *him* – who could
help loving him that knew
him well. Yrs sincerely

A Rugby

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5 August 1886
T. Spencer Wells

Chirurgical Lectures

by Mr. J. Hunter.

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Introduction

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In the Course of these Lectures I shall differ very much from what is taught in Books on the Subject of Surgery; the [illegible] I have to communicate are merely my own & not drawn from Books. I have Reason to suppose them true because they are founded on Facts.

I shall consider first the animal Oeconomy: I shall chiefly mention the Actions of the Body in a diseased State, with their Necessaries & natural Functions in Health. I have it not in View to give a full Course of practical Surgery, but merely to teach the Principles of the Art.

It will be unnecessary to treat of the Operations & of many particular Diseases; these are taught by Anatomists & others: the Principles are most necessary, & these only shall be the Subject of our present Enquiry.

Every Art has its Principles, from which we are enabled to establish all the Facts & account for new ones: the same holds good in Surgery.

Effects are what strike the Senses more forcibly, even while the Cause is unknown; but as these are only consequences, we should endeavour to discover the Cause. In this Manner we often find.

We know the Causes of Inflammation, Suppuration & Mortification, hence we are enabled to check their Progress.

We find it necessary sometimes to increase the Violence of a Disease, before we can effect a Cure, as in indolent Inflammation.

Sometimes it is necessary to change one Disease into another; in venereal Inflammation by exciting common Inflammation we effect the Cure.

If the Animal were always equal to the Task it was to perform, Surgery would be unnecessary, but the Powers of Restoration which are inherent in the Animal, being not always sufficient, it is our Business to increase the Action when too weak & moderate it when too strong.

It becomes often necessary to introduce Chemical Means in the Cure of Diseases, these failing, we have Recourse to mechanical Means as the different Operations.

As the Operations (though the Necessity for them is in Truth the Defect of Surgery) become sometimes indispensible, it is right to know how to perform them.

A competent Knowledge of the Parts of the Body should be strictly attended to, as ther will lead us to their Uses, we should know the different Functions & consider the Dependance one Action has upon another.

With Regard to Operations we should know when they will relieve, & when Nothing but an Operation will relieve; we should also know when the Habit will bear an Operation, this indeed, is sometimes almost impossible to ascertain.

The Facility with which a Man thinks gives him a Superiority over others; few have observed Nature with more Attention than myself; yet even now I think myself scarcely equal to the Task I have undertaken. A Man will be ignorant of what Knowledge he possesses untill he arranges his Ideas.

The Principles of Disease which are the Objects of Surgery, have not been sufficiently attended to; these we intend chiefly to consider.

We shall begin with Physiology, as far as it is necessary to understand the Principles of Disease.

Disease may be called a Perversion of the natural Action of the animal Oeconomy.

I will first consider those Diseases which arise from Accident: secondly, those which are similar to them; then the Union of divided Parts by the first Intention; next Inflammations which will throw Light on various Subjects, as Adhesions, &c

Cure of the Hydrocele, indurated Tumours &c, then the Union of Parts not cured by the first Intentio as compound Fractures &c; lastly we shall treat of some specific Diseases, as Scrophula Cancer &c —

Rationale of Surgery.

Matter.

1 By Matter we mean that Substance of which this Globe or Earth is composed.

2 By the Impressions of Matter alone we are led to the Knowledge of our Senses & by our Senses only we judge of the Existance of Matter.

3 But our Sensations are excited not by the Impressions of Matter itself, but by the Impressions of the Effects of Matter; thus when we hear a Drum beat, our Sensation is not excited by the Drum, but by the Vibrations of the Air, produced by the Strokes on the Instrument.

4 So also the Properties of Matter act upon our Senses; the Sensations of sweet & sour are not Matter, but the Properties of Matter acting upon the Tongue: Touch arises from Resistance in Matter.

4 Matter is found in one of the following States Solidity, Fluidity, or Vapor.

5 The general Kinds & Properties of Matter are few, but different Modifications & Combinations of those Kinds & Properties of Matter produce great Varieties in Appearance.

6 The following Properties are common to Matter, Attraction of Cohesion; chemical or elective attraction; Attraction of Gravitation.

4 By Attraction of Cohesion, Bodies of similar

† Globules of Quicksilver — or Globules of Water on Cabbage Leaves, illustrate this Remark —

Very questionable whether there be such a Principle in Nature as Repulsion — the Cause of Fluidity & of Vapour is certainly not this Principle but the Matter of Heat which simply expands all Bodies by enlarging their Interstices —

Properties tend to come in contact with one another, & to remain so when this is effected: the Attraction is very slight in Fluids; in them, however, the stronger it is, the more globular or spherical the Particles appear & vice versa.+ Elective Attraction disposes Bodies to join with various other Substances, forming together one homogeneous Mass; in this we have an Instance in the Combination of an acid with an alkali; there are as many different elective Attractions as there are different Methods of mixing Matter. Elective Attraction operates only when Fluidity or Vapor are present; the Compound may however become solid afterwards by the Attraction of Cohesion; the increased Action of Cohesion in solid Bodies may be called the Attraction of Solidity.

7. Repulsion is also a Property of Matter, but it seems doubtful whether it is so universal a Property as that of Attraction; nevertheless, the Action of Repulsion seems to be in a great Measure the Cause of Fluidity & Vapor.

8. Magnetism seems to belong to Attraction of Gravitation: by the Attraction of Gravitation the different Parts of Matter are kept together, so as to form one great whole.

9. Each Mass of Matter, though ever so minute, has in itself a Centre of Attraction.

10 Heat alone seems a generally necessary

Agent to Fluidity & Vapor.

9 Heat seems to destroy Attractions: Mechanics depend upon the external Figure & Magnitude of Bodies, & the Properties of gravitation, Attraction &c.

11 The Operations arising from Changes in Matter are regular & determined according to fixed & certain Laws.

12. We have been considering the Properties & Modifications of common Matter, but Considerations on Matter may be carried much higher, & Modifications of, or Kinds of Matter, may be found entirely different in every Respect from common Matter. These are the Matter of Animals & Vegetables.

13 The first Principles of Animals & Vegetables are perhaps the same, but they have many Properties totally distinct & perfectly different from one another.

14 It is observed (13) that the Properties of animal & vegetable Matter are perfectly distinct, although their first Principles may be similar; and indeed so perfectly distinct are Vegetables & animals in many Properties, & in the Modification of Matter observed in their Production & Formation, that no Connection between them has ever been traced.

15 They differ totally from common Matter, in

+ See Keir on the similarity of organic
Matter.

that they have each of them a Power of acting & performing various Operations within themselves and of producing or generating Matter of their own Genus from themselves.

16 Vegetables & animals essentially differ from each other; both, indeed, have a Power of performing Operations within themselves, & of generating from themselves new Matter, but in other Respects they essentially differ.

+17 The Operations of animals are attended with Waste of their component Parts; this Waste is recruited ~~from~~ by a Supply from common Matter, but common Matter can not be immediately converted into animal Substance, nor can the Decay of animal Substance be supplied from common Matter, until it has by certain Changes been altered into animal or vegetable Matter. Vegetables can immediately convert common Matter into their own Substance, & be supplied from it; but animals cannot, which proves the animal Matter is still further removed from common Matter than the Vegetable.

9 The Circumstances of Worms &c which feed upon Earth, would seem to afford an Exception to this Position; it is likely, however, that the Earth they take in, is only useful, so far as it contains animal or vegetable Matter. In order

This would be a fallacious Experi-
ment for Kali will not ~~destroy~~ dissolve vege-
table Matter though it will animal, as
is well known by Dyers who use
alies—

to determine this, we should combine an alkaline Salt with Earth which will destroy whatever animal or vegetable Matter it contains, then wash it thoroughly & try whether Worms will live upon it.

18 Animal & vegetable Matter may be viewed in two States, as living or dead. When living, it has in itself both a Power of Continuance, and of generating new animal Matter, but when dead it loses these Powers.

19. Animal & vegetable Matter after Death is capable of being acted upon by the Operations of Chemistry & by those of spontaneous Dissolution; by which latter it is at length reduced to common Matter, out of which it is at first, probably, formed: the Presence of Life is an antidote to & resists both one & the other.

20 Animal Matter submitted to chemical Enquiry & the Operations of Fire, yields certain Substances peculiar to itself, as the volatile alkali, empyreumatic Oils, calcareous Earth & a Fluid of Water; other Substances, as Iron &c are also found, which are superadded, & do not constitute its natural component Parts.

21. Animal Matter may receive a Supply of its Waste from vegetable Matter.

Fermentation in Animals.

22. Many Changes taking Place, during Life in animal & vegetables have been attributed to a certain Operation, called Fermentation: for it is known that Fermentation will powerfully alter all Substances which are subject to its Action, & even ~~[illegible]~~ change them to new & totally different Substances. To this the Secretions of animal Bodies have been supposed to be owing: to this the Change of the Water into the Juices of the different Plants, nourished solely by it, has been imputed; to this Digestion &c.

23. But though animal & vegetable Bodies are the Subjects of Fermentation: no Change wrought in them during Life can possibly arise from this Cause, for the Presence of Life resists Fermentation, & no body whilst retaining its Life can be acted upon by Fermentation; it can only take Place after the Destruction of Life which is the preserving Principle. We have speak of Fermentation in the same Sense that Chemists understand it.

(Principles of Life)

24 The Changes arising in the animal & vegetable Matter during the Presence of Life are produced alone by the peculiar Powers of the Principle of Life; to its Operation we refer all the Secretions, all the new Productions, the Digestion of

the Substances &c.

25. The Operations of the Principles of Life cann be referred to mechanical Powers.

26. Life is totally distinct from any Property of Mechanics; we see, indeed, the Movement and Contraction of the Bones are regulated by mechanical Laws, but the Actions of the Muscles which put the Bones in Motion, are not owing to any mechanical Power or Principle, nor by mechanical Principles can they possibly be explained.

27. From an Examination & Survey of animal Matter when dead, we gain an Idea of living animal Matter; as from Life only we gain an Idea of Death, so from Death only we ~~gain~~ form an Idea of Life.

28 The Functions of, & Changes in an animal Body during Life, are all to be referred to the Operations of the Principle of Life. The Properties of the Principle of Life consist in the Preservation of animal Matter in the living State, and in Action. Life may exist without Matter being in a State of Action, & the Property of Self-preservation may alone be present; Life being, at the same Time present in full Force. Thus a new Laid Egg is truly & really alive, though no Kind of Action is known to be performed by it.

9 Experiments to elucidate 28.

— Mr. Hunter found that a new laid Egg, tho' kept by Incubation in a Heat of 120 Degrees, until it was hatched in two or three Weeks, when the Chicken was excluded, showed not the least Signs of Putrefaction; another Egg which was not hatched, & of Course died, became in the same Circumstances highly putrid.

Experiment 2d. A new laid Egg was exposed to a Temperature between 17 & 15 Degrees of Fahrenheit's Thermometer, in which Situation it was kept half an Hour, its Life being then destroyed by freezing; it was thawed by Heat; being then again exposed to 25°. it froze in half the Time it before required, that is in 15 Minutes: While alive it had the Power of resisting Cold & consequently the Destruction of its Life a considerable Time; but when once killed, it had no longer the Property of resisting the freezing Power of Cold. Mr. Hunter made a Number of other Experiments on Animals; he attempted to freeze two Carps, but without Success; he found that for a long Time they generated Heat & resisted the Destruction of their Life by freezing, at length that Power was exhausted & they died. Almost every Thing possessed of Life enjoys the Power of resisting Death. Mr. Hunter found that living Vegetables would endure cold & resist being frozen, much longer than Plants whose vegetable Life had been destroyed. Experiments tried on Dormice & were found to have the same ~~effect~~ Result.

Experiment 3d. A dead Egg froze in the Degree of 32. & a living Egg gradually sank to 29; it then continued stationary for some Time; it afterwards rose to 32 & then became frozen; the same Experiments was made on Snails, Snakes, Eels & those of the colder & imperfect Animals, which proves that the fresh Egg is as truly alive as the animals just spoken of, though it has only the Property of resisting Death, or self Preservation, & not any Power of Action.

2. Life does not consist in any Modification of Matter; it either is some thing superadded to Matter, or else it consists in a peculiar arrangement of certain fine Particles of Matter, which being thus disposed, acquires the Properties of Life. I enquired of Mr Hunter if this did not make for the exploded Doctrine of equivocal Generation: he told me, perhaps it did, & that as to equivocal Generation, all that we could have was negative Proofs of its not taking Place. He did not deny that equivocal Generation happened, there were neither positive Proofs for or against its taking Place.

3. Life has been compared to the Spring of a Watch,

as that Spring gives Motion to all the Wheels, so Life gives Action to the several Parts of the Body, but this Idea is not just, no one Part of the Body is dependent for Action on any other Part, but the several Parts each posses Life & Action within themselves.

31. Life, in the living Animal is as much the Property of every individual Part as Gravity is of every Part of Matter; every one Part is as much alive as the whole.

32. Every Action in the animal Body is produced by the living Principle; the secondary Action of Parts is as truly produced by it as the primary.

33. Magnetism will somewhat elucidate what is said of Life being superadded to Matter, or arising from a particular Arrangement of certain Particles of Matter: a Bar of Iron placed for a long Time in an upright Position, will acquire a magnetic Virtue, so perhaps the Particles of Matter arranged & long continued in a certain Position, at Length acquire the Power of Life.

The Doctrine of Colors will tend to the same Purpose, we see by different Arrangements the same Colors will produce very different Shades.

34. Two, three or four, or any Number of Particles of Matter thus arranged, may form a muscular Fibre; a certain Number of these Fibres together

rm a Muscle.

35. Life does not consist in any Organization of Matter, i.e. Matter will remain as organized as ever after the Destruction of its Life.

& Though Organization is not necessary to Life it is to Action.

36. As from an Observation of Matter in its inanimate State, we gain a Idea of living Matter, o from our Observations of the Functions & Actions f Parts in a State of Disease, we gain a Knowledge of or correct our Opinions of the natural ctions & Functions of Parts in a State of Health.

37. Solidity in Matter is necessary for its Action, it is the fixed Point, from which its Actions must roceed, & on which they must depend; therefore we find the Parts of Animals destined for Action, solid: These animal Solids are kept together by Cohesion.

38. The muscular Parts of an Animal are active; scarcely any Part is purely passive; almost all arts have something of Muscle in them, & have ome Share or Degree of Action.

Actions of Animals.

39 The Actions of an Animal are twofold; the rimary Actions ~~are~~ or those which every Part has in itself, as Nutrition, Growth, Support, without Regard to any Operation, for the Benefit of, or the producing any Change in the System in general; and secondary Actions, or those which are pro-

formed by any Part with a View to the Benefit of or the producing some Change in the general System, as the Actions of the Stomach the Brain &c The first are the true animal Movements, the second are what are called Operations of the animal Œconomy: as most secondary Actions are employed for the Ends of the first, having necessary Relation to the first, so those secondary Actions are in general permanent & constant. In Diseases all these secondary Actions may be suspended for a Season, the primary ones are never interrupted for the least Portion of Time, so long as the Parts live

40 — There are, besides the muscular Parts (38) which are the active Powers, other Parts which have a Kind of secondary Motion, that is a Motion communicated to them, elastic Parts; but to the Operation of these Life is not necessary, their Powers are equal after the Death of the Animal, to what they were during Life.

41. There are other Parts alive in the animal Body, that have in themselves no Kind of Action, but whose Use is merely passive, which are different in Strength & Density, some for Union as the cellular Substance, some for Strength as the Tendons & Ligaments.

42. It is said (40) that it is not necessary to Parts being possessed of Elasticity, that Life should be present; Elasticity is indeed a Property of many

Species of Matter besides animal.

43. The Actions of the living Body are simple and compounded. The Powers of Action distinguish living animal & vegetable from dead & common Matter.

Stomach.

44. The Operations of an Animal (17) are attended with a Waste of its Substance; Supply is therefore necessary to their Continuance: This Supply is performed by Means of a Bag which though small in Comparison to the Bulk of the other Parts of some Animals, is the most important Part of all. This is the Stomach. The Stomach is the principal Distinction between Animals & Vegetables; all Animals have a Stomach, no Vegetable is possessed of any thing like one. To many Animals the Heart, Brain & nervous System & many of the Viscera are wanting but no Animal is without a Stomach: it is the Stomach only which is necessary for the Support of a simple Animal; & Organs of Generation for the Propagation of its Species, therefore, some Animals consist of little more than a Stomach & Genitals.

45. This Stomach may be called the true & primary Animal: all other Parts may be considered as superadded according to the Functions of the Animal, to which some or more are given, to perform in the Stage of Life; for one Animal that possesses a Heart there are Millions that want it.

what is the difference between
Vomiting). and Puking)?

46. The Stomach by Means of its hidden Powers, converts various Substances into one Kind of Matter, which is taken into & forms Part of the Animal: This very curious Kind of Operation is calle Digestion.

47. This Viscus, in the most complicated Animal, as in Man, is intimately connected with the general Œconomy; it is as much the Seat of Irritability, as the Brain is of Sensibility; it is highly affected by many external Influences, which in themselves have Nothing to do with the Operation of Digestion, as Wounds &c. It is more affected by morbid Operations produced in Tendons, Ligaments, & other Parts of small natural Sensibility, than by the same taking Place in Muscles. It is chiefly affected by Changes taking Place in the internal Parts as the Brain is by those in the external Parts. It is intimately connected with Affections of the Mind, whether produced from Injuries of the Brain or from horrid Stories or Sights, to which a vomiting or purging has been known to succeed, especially the last.

Vascular System.

49. In compounded Animals, as Man, the vascular System, or that by which Fluids are carried to & taken from different Parts of the Body, by Means

of which Growth & Nutrition are afforded to Parts & the whole; becomes an important Subject of Enquiry.

This is divided into the arterious, the venous and the absorbent System.

50. The animal Body is considered as an Hydraulic Machine, & by those three Sets of Vessels its Course of Fluid is conducted.

¶ Experiments have excluded Veins from the office of absorbing; even in the Erection of the Penis, the Veins do not absorb. I consider the Corpora cavernosa as Veins through which the Blood is constantly flowing from the Arteries, & that there are a Number of Veins opening into the Corpora cavernosa, & that the Blood is flowing into them; that in Erection there is a Spasm upon the Veins, which prevents the Blood flowing through them, hence an Accumulation & Distension in the Penis, which ceases with the Spasm. I found that by tying the Veins of a Dogs Penis an Erection was produced.

Arteries

51. The Arteries carry the Blood from the Heart to every Part of the Body, consequently they convey the Materials, for the Growth, Nourishment & Support of Parts, for the Regeneration of them when lost, & the Supply of them when

wanted also for the different secretory Organs, to separate Liquors for any further Purposes of the animal Oeconomy, or to eliminate any thing superfluous or noxious.

Veins

52. The Veins return to the Heart, the Blood which remained of what the Arteries had carried from it, after the different Purposes, 51, have been effected: they are also said to carry Blood from certain Parts to the Liver, for the Production of Bile.

Absorbents.

53. The Absorbents take up Fluids & also solids from every Part of the Body, which they pour, by Means of a peculiar Duct, into the Blood: by this Property they become the Means of supplying the System of Circulation with nutritive Particles, also of conveying Disease into the Habit. Thus being the Instruments both of Health & Destruction. By this Property of absorbing solids as well as Fluids, they become the Modellers of the Shape, Form & Structure of different Parts: they prevent Parts from growing into irregular & inconvenient Figures; In this Light they may be considered as the Builders of the animal Fabric, while the Arteries are as the

Labourers, [illegible] [illegible] [illegible] [illegible] [illegible] for Nutrition, or as the Polishers of the rougher Circumference of the arterial Vessels; by this Property they take up & remove Parts which though useful in one Period of Life become useless in another, as the Thymus Gland &c

& also the Gubernaculum, the Membrana Pupillaris &c; when a Limb is removed we know the End of the Bone sawed through, is a circular Plane with hard Edges; if examined at some Length of Time after the Operation, we find the End of the Stump approaching the Section of a Sphere.

By this Property also, when their Actions are much excited, they take up solid Parts, whether soft or hard, thus producing what has been called Ulceration; this may be called ulcerative Absorption.

54. The Action of this System of Vessels (53) being considered with Regard to the ultimate Effects may be divided into two Kinds viz.

1st Absorption of extraneous Bodies.

2d Absorption of the Animal Itself.

55 - The Absorption of extraneous Bodies, as observed (53) introduces both the Particles of Nourishment into the System & the Particles of Disease.

Final Use of Absorption

56 The Absorption of the animal itself, is employed either for the Nutrition of the animal, either when Absorption of extraneous Nutrition cannot take Place, or when the Mind is unmindful of directing Nutriment to be taken in; & yet Nourishment is still necessary to the Life of the Animal, or when an unnecessary or inconvenient Part is to be removed.

57 The Mind is frequently unmindful of taking in Food in Fevers; no Desire of it being by him perceived; but Nourishment being necessary for the Sustenance of the Animal, the Fat & other Substances are taken up by the Absorbents, and carried into the Circulation for the necessary Purposes of affording Nutriment to the different Parts of the System. Thus the animal is for some Time enabled to feed upon itself.

58 Every Part of the Body, may be subjected by Disease to the second Kind (14. 53) of Absorption. Absorption will either take up from Parts, Portions of their interstitial Substances, as Earth from Bone &c or it will take up whole Parts as an entire Bone.

59. When a Stimulus of any Kind is absent to excite the Process of Absorption, the Circumstance

will take Place; a Consciousness in the Lymphatics of the Propriety or Necessity to begin Absorption: but when the Part to be absorbed is dead, the State of Consciousness is incompatible with an inanimate State of Matter.

60 To the Removal of dead Parts by internal Processes this System of absorbents seems alone to be equal, no chemical Process can perform it.

Ulcerative Absorption

61. The Process of Ulceration or ulcerative Absorption, is always the same, different Causes may indeed produce it & different Circumstances may be present with it.

62. The State of Consciousness (59) may be induced by different kinds of Stimuli, but the Mode of Operation will always be the same.

63. The Absorbents have a Power of taking up both Solids & Fluids.

64. The Mode of their Action is not clearly ascertained; it has been imagined that they are capillary Tubes, but capillary Tubes can only absorb Fluids, & the absorbents take up Solids.

65. The Opinion of their absorbing Matter in a fluid State alone, which would show that the Solids, if to be absorbed, must undergo Solution by Means of some Fluid which acts upon them;

as a Solvent, is to be doubted.

66. It is equally & more probable, that the Absorbents have, like entire Animals, Mouths & Teeth, that the Form of the Mouths & Teeth in different Absorbents, essentially differ according to the Parts they are to act upon, so that perhaps could we obtain an accurate Survey of them, we might be enabled to dis them according to these Differences.

67. It is doubtful whether Substances mixed with the Blood are essentially altered or not; the indestructible Parts of Vegetables, as the colouring Part of Rhubarb, pass off by Urine, or by some other Excretion in their unchanged State: the variolous Matter is not altered by the Blood; the venereal Matter when taken into the Habit is certainly much altered, it is different ~~to~~ from what it was before it was absorbed. This is the only Matter that we know undergoes a Change.

68. The Power of living animal Matter to consume itself is equally probable with the Property of living Matter to produce fresh living Matter from itself.

Brain & Nerves.

69. From a peculiar Arrangement of the Particles of animal Matter, Muscles are produced,

a different arrangement of those Particles forms other Organs, so from a particular Disposition of those Particles in certain Animals the Brain & Nerves are fashioned; which being acted upon by various Impressions, various Sensations arise, the Effects of which are the Mind & Will

5. The Existence of the Brain & nervous System is not necessary to simple Life, Millions of Animals want both, but they are necessary to the Performance of certain Functions of Life, & without them, in those Classes of Animals, to which they are given, active Life cannot go on. In the perfect animal, as Man, there have been Instances of Monsters being born without a Head, but not being able to support the Functions of Life, necessary to be performed from the Time of Birth, they die soon after they come into the World, but they were truly & virtually alive while in Utero.

SENSES.

6. The Impressions given by external Objects are considered as of five Kinds; of these one is Touch or Feel, of which every sensible Part of the Body is the Seat, the other four Kinds, severally affect peculiar Organs adapted to them.

IDEAS.

7. The Sensation raised by an Impression is two-fold, first its Effects on a Part to which it is applied,

secondly the Change produced in the Brain in Consequence of that Effect; the first is simply passive, the second State is active, in which Motion is produced in the Brain & an Idea is formed.

72. According to the Kind of Change effected in the Brain the Idea will be agreeable or disagreeable.

73 As from Habit we gain a Power of judging & distinguishing what is advantageous & useful, from what is inconvenient and pernicious, when an Idea respecting an external Object is excited in the Mind, & that Idea is followed by an Inclination to possess or obtain that Object, we should be irresistibly inclined to gratify that Inclination when arising, did not our Power of judging of all Consequences that might arise from gratifying the Inclination in question, acquired as before said from Habit, or from repeated Observations determine us to the contrary. This restraining an Inclination in the Mind we call Reason.

Will

74. A Determination of the Mind whether produced by Inclination or Reason, is called the Will.

Voluntary Action

75 In Consequence of any Changes produced in the Brain, as concomitant on the Action of the Will, an Action in any moving Part of the Body is excited; this is voluntary Motion or Action: the different Parts of the Body receiving Impressions

have a Power of acting on, & exciting Changes in the Brain, & a Change in the Brain, however produced, has a Power of producing a Change in other Parts of the Body.

6. The vital Principle, or the Principle of simple Life & that Principle on which the Powers of Sensation depend by this Connection, 75/ act mutually on each other.

7. It seems as if we had no simple Sensations; but that every Sensation of which the Mind is sensible is compounded of two States as 71.

75 The Operations of the Brain & nervous System (74) have not so extensive as some have imagined; they can neither supply a Part with Nourishment nor preserve a Part from Dissolution.

76 Every living Body has an Intelligence of its own feelings after an Impression has been given to it; previous to & exclusive of an Idea existing in the Brain: thus every living Part has in itself a Consciousness of an Impression given to it, whether of Pleasure or of Pain, & as it were a Power of determining to Action, independent of the Powers of the Mind.

77 The Power of the Nerves is merely passive, hence previous to any Action being excited in them, an Impression must necessarily be given to them.

78 The different sensitive Organs are appointed to receive the several kinds of Impression, given to the Body & which Impressions are of five kinds but every Nerve is subject to receive the im

[illegible]tion of Touch &c. [illegible]).

82. The living Principle is coeval in all living animal Matter, with the animal Matter itself, & may long exist without Sensation. Thus a Child in Utero has no Sensation till it is born.

83. The Nerves are not indebted to the Brain for their Existence, there may be Nerves though there is no Brain, but the Existence of the Brain is necessary for the Formation of Ideas.

[illegible] Many Fishes have Abundance of Nerves, with a very small Quantity of Brain: & in many, where the Brain has been wanting, acephalous Monsters have still their Nerves.

84. Parts intended for strong Sensations, have always a great Quantity of Nerves distributed to them.

85. This Principle of Sensation relates to all our external Actions as the Principle of Life does our internal ones.

86. In Man & the perfect Animals, Sensation is intimately connected with Life, if the Powers of Sensation are constantly kept exercised, the sensitive Principle becomes fatigued, & the Principle of Life also suffers with it. Sleep, therefore, by giving Relief to the sensitive Principle, prevents Violence being done to the Principle of Life.

87. When an Impression is given, it must continue a certain time, in order to produce a sensation, if

it last but a short Time, no Sensation will be produced; if an Impression continue too long, a different Sensation will be yielded: it will then produce only a disordered State of the Nerves.

87. Sleep is to the sensitive Principle, what Death, or the State of Inaction is to the living Principle: as the living Principle may exist though no Action is going on, so the Existence of the sensitive is not incompatible with the Absence of Sensation.

88. Thinking is the Effect of certain Changes in the Mind, accompanying Changes in the Brain. though with Respect to ourselves, or a Consciousness of Action or Sensation, we are in a State of non Existence; & although we have then no Sensation, yet the Effects of Sensations are not lost, the Mind will be thinking which is the Effect of Sensation whilst we are asleep, as in Dreams; we seem indeed, then to have Sensations, but our seeming Sensations are fallacious.

89. We often dream when awake, having a seeming Perception of Things & Objects which do not exist.

90. Sensation excited in a certain Degree is agreeable, in a greater Degree painful, & then the natural Sensation will not take Place, but the Sensation of Pain will be produced. Thus an excessively glaring Light being applied to the Retina, Pain, not Vision will be produced.

So a loud Noise produces the same Effect on the Ear, in Lieu of distinguishing Sounds the Idea of Pain will be excited; even the Tympanum of the Ear has been broken by this Violence.

91. An Impression different from that which is the one, for the Perception of which, any Organ is naturally & particularly adapted, may produce in the general brain the same Sensation, as would have taken Place had the natural Impression been given. Thus a smart Blow on the Eye, will excite the same Sensation as a Flash of Light, the same Blow on the Ear will produce a Sensation of Sound.

92. Uneasy Sensations may in many Respects be similar to a natural Appetite; they rather warn the Animal to the avoiding something injurious to them, or the removing something unsalutary.

93. During Sleep whatever Actions are performed from the Brain whether consequent on Disease, or Health, cease. Thus St Vitus's Dance does not affect the Patient whilst he slumbers.

94 The living Principle in any Part of the Body will continue to exist, after the Nerve leading to any Part is divided.

P. Sensation is not necessary to simple Life, a Child in Utero has no Sensation, & yet it lives.

95. When a Part intended for Motion, has its Power of Motion, it wastes, for being now no

longer useful to the Animal, as a moving Part, it becomes [illegible] to interstitial Absorption – The Will can no longer influence it.

So a Muscle when its Action is suspended by the Communication with the Brain being interrupted, or by any other Means, it wastes. It is a Law in the animal Oeconomy that the Size of a Muscle will be in Proportion to the Frequency of its Use: of this we have Variety of Instances in the Legs of Chairmen, the Arms of Watermen & the Thickness of the muscular Coat of the Bladder, when it has been long used to frequent Contractions, from Irritations, as those from a Stone. It will be taken Notice of when we are considering the Diseases of the urinary Passages &c. So also Muscles waste, if the Joint they serve is rendered useless, because their Action can no longer be performed.

96. The more distant any Part is from the Centre of its Energy, the less fit it will be for certain Actions, as indeed it will receive less Energy; therefore, all the vital Parts are near the Heart: all the Parts intended for acute Sensations are near the Brain. So Mortification from Debility more frequently attacks the extreme Vessels, especially if the Patient is old; perhaps one Reason may be that the Blood loses somewhat of its nutritive Powers before it arrives at them.

97. In the animal Body there are Actions which proceed from certain fixed Principles in the

animal Oeconomy are regulated by certain fixed Laws: there are only Actions which arise in Consequence of the other Actions, which we call Sympathy.

98. There is also another Kind of Action which we call Habit. Actions frequently repeated in any Part induce a Custom of acting in a given Manner, in any certain Part; & from this accustoming a Part to any such Action, Habit arises.

99. Habit is a Kind of Force or Violence done or superadded to the first Principles: Parts from Habit acquire a Power of acting in a more forcible, or in a different Manner, from that which primarily took Place in them.

100. This Habit may be called a Species of Memory: as Memory consists in a Repetition of Ideas once taking Place in the Mind, so Habit consists in a frequent Repetition of Actions in any moving Part of the Body.

101. Habit is similar to a Body once put in Motion, which will not cease from Motion, unless some new Cause for obstructing Motion arise

102 - Habit becomes a Cause of Motion, not only in Parts accustomed to that Motion, but also may be a Cause of rest at that Time in other Parts; like a Body once put in Motion it does not require a Renewal of the same & equal Degree of Force which first gave it Motion, but the Addition of a small Quantity of fresh Force is sufficient to

keep up the Motion.

03. Habit will even become a Cause of Actions in the Will; it will make those Actions of it voluntary, which were involuntary & also the reverse. The Strength of Habit will be much or little in Proportion to the Violence of the Impression which gave Rise to it.

4 When Stimuli are often repeated, they lose the Power of producing Sensation; hence the Mind is at Last insensible of the Change; hence Habits of Disease arise 89 & Parts get into & go on without the Mind perceiving it ~~the~~ a diseased Action: hence also Parts become insensible even to noxious Stimuli, to the frequent Repetition of which they have been accustomed; hence whilst in Strangers the Bite of a Bug & Musqui produce disagreeable Effects, those who have been much subject to the Application of their Poison, have their Skin at Last insensible to it. As in the Body, so it is in the Mind, horrid Sights they produce in it at first, the greatest Changes, but by frequent Repetitions of them, the Mind becomes reconciled to them, & at length scarcely an Idea is excited by their Impression 148.

104 As in the Memory, it is not necessary, that in Order to the Recollection or Renewal of an Idea, the Impression which gave Rise to it should be repeated with its full Force, so with Re-

ject to Habit in Parts, it is not necessary in Order to excite them to an equal Action, that the Impression or Stimulus, should be equally violent with what it was when it first produced the action in the Part. Habit is always gaining on us & little Force is requisite to keep it up.

105. As in the Mind the Remembrance of Impressions which were of little Force, wears off unless, the Impression be repeated, before the Effect of the first Impression ceases, & consequently Memory of the Impression will not remain: so neither will the Power of Habit remain, if second Impression be not repeated before the first ceases.

106. In accustoming Parts to Habits, or Impressions two Circumstances will arise.

1st If the Impressions be slight & often repeated, or if the ~~Impr~~ Force of the Impression be each Time gradually augmented, the Parts accustomed to them, will become by Degrees insensible to them so that here the Cause may remain, though the Effect diminishes or ceases.

2dly The Effect may remain though the Cause ceases; as violent Impressions will continue to produce their Effects, long after they themselves have been removed; according to the Rules of Habit complied with, Health or Sickness will be induced.

107. All Stimuli will not produce the same Effect

when applied to different Parts. Hunger will be Stimulus to the Stomach alone, Light to the Eyes, Sound to the Ear &c.

108. Dispositions of the Mind will arise from Ideas produced from certain Impressions given to the Brain; a Disposition taking Place may be compared to the State of an elastic Body, when altered from its pristine to some other Figure; the Disposition of the elastic Body to recover its pristine State, is destroyed by its Action in recovering that State: so when the Disposition has produced such a State of the Will, as to excite the moving Powers to any action, the Disposition no longer remains; with this Difference however, that the elastic Body loses its Disposition instantaneously, the animal by Degrees.

109. When an Action is excited by the Powers of the Will, in Consequence of a particular Disposition in the Mind taking Place, the Brain, or the Seat of the Disposition, which might before be considered as in an uneasy or stretched State, now returns with Respect to the Consideration of the Disposition, to a State of Rest.

110. The Blood which is the Fluid circulating in the Arteries & Veins, is not a passive inanimate Matter, but is endowed with a Principle of Life in itself, equally with the solid Parts.

111. A particular & permanent Figure of Parts in a living Animal is only necessary to mechanical Action; action is not necessary to the Pre-

sence of simple Life. The Blood perhaps, has not Motion in itself, but Motion is not necessary to animal Life.

112. The Blood is not only alive itself, but it also by Circulation through every Part of the Body becomes the Means of & carries Life to other Parts; thus being the living Support of every Part of the Fabric; even the Nerves themselves are supported by it; they do not convey Life to Parts, but only direct the Motions of Parts, & without the Blood will themselves become dead.

Q 110.111.112. In Inflammation though the Blood coagulates more slowly, yet there is a greater Disposition in the Parts to separate from each other. The Separation will often be so perfect: that if you dip your Finger into the Blood at the Top during Coagulation it will not be coloured at all red. This inflamed Blood will sometimes be full half an Hour before it is completely coagulated.

113. Whilst the Blood is circulating in the Vessels it is always fluid, but it is not always alive whilst Fluidity remains; if by any Means the Life of the Blood is suddenly & entirely destroyed after its Death it will still remain in a fluid State.

Q. If the Life of the Blood be suddenly destroyed &c —

Cases in Support of this

A Gentleman died suddenly in a violent Fit f Poison; its Blood would not coagulate. Two Deers were hunted to Death. the Blood of neither would coagulate. The Blood of Animals killed y Lightning or Electricity will not coagulate ometimes, but this will depend on the Manner in which the electric Matter was applied; if so as to pervade at once the greatest Parts both f Fluids & Solids, this Effect may be produced.

114. Whilst alive it is always fluid, if its Life be suddenly & entirely taken away, it coagulates it dies & the seeming component Parts recede ne from the other.

115. Long Rest out of the Course of Circulation & exposure to the Atmospheric Air, occasions the coagulation of the Blood: if unexposed to Air, Blood will remain long at Rest in the living Body without coagulation.

116. Organization is not necessary to Life; an Egg is not organised & yet an Egg is alive; so Blood is not organised, yet it is possessed of Life.

9. Though the Blood, when in its fluid State, has no Sensation, yet when formed into Solids it may acquire Sensation. Before Blood is capable of giving Life & Support to Parts, it must have circulated through the Lungs, where it undergoes some essential Change; perhaps it is then first completely in its second State or Vivification.

117. There is a perfect Harmony in a State of Health between the Fluids & the Solids of an animal Body; so also between the Blood & its containing

ſsels. There is also a Consent between them in Dis-
ase, & when the Solids are affected, the Blood also puts
n a diseased State; thus the Blood is as capable
of Disease as the solid Parts are: So also the
Blood becoming diseased, the solid Parts also suffer.
9. As the Blood acquires an inflammatory Dis-
position when circulating through inflamed Solids,
o it may lose

110. As the Blood conveys to Parts the Means of
Nutrition & Growth, so from the Blood new Solids
are formed, when in Consequence of a Disease or
Violence, there has been a Loſs of the former ones;
or when there arises a Neceſsity for their Pro-
uction.

11. When there is a Disposition to Union in Parts,
naturally distinct from each other, Inflamma-
tion will arise, which Inflammation will be in
Proportion to the Strength of that Disposition. The
Blood paſsing through inflamed Parts undergoes a
Change according to Circumstances, & from the
Change wrought in this, coagulable Lymph is
fitted to be formed into Solids; by the solid Parts
formed from this Lymph, Parts violently separated
from each other, are again united & Parts before
naturally severed from each other are blended
together.

120. The living Parts of the Animal, both the Blood
& the Solids, being continually wasting, Supply is
neceſsary; this Supply is obtained by Means of
the Fluid prepared by the Stomach (44) but before

the Food taken into the Stomach can furnish the desired Supply, it must undergo two Processes.

1st Animalization

2d Vivification.

from living Matter only, living Parts can be made.

121. Sensation is not necessary to Life, the Blood may therefore be alive, though it wants Sensation.

Heat.

122. A certain Degree of Heat is necessary to the Preservation of animal Life, whether existing in fluid or solid Matter.

123. A certain Degree of Heat is necessary to animal Life (122), a greater Degree is necessary to animal Action; below the former the animal cannot retain simple Life, below the latter, though it may retain simple Life, it will not retain the Power of Action.

124. Almost every Order of Animals requires a Degree of Heat peculiar to themselves: Some Animals will not endure this Heat to vary much from a common Standard without Abolition of the Action of Life. A Bee requires its Heat to be kept up; a Wasp will suffer its Heat to vary with the Heat of the Atmosphere.

125. In the State (124) Digestion & Excretion & other Faculties will be suspended, & the Animal remain in a torpid inactive State.

126. All Animals in themselves have a Power of generating Heat, when the Actions of the external Co

are so great as to endanger the Preservation of Life; this Power arises wholly from the Principles of Life, for dead animal Matter possesses no Power of resisting Cold: this Generation of Heat is truly Life operating against its Destruction.

4. An Explanation of the Power Animals have of generating Heat was attempted.

1st By supposing it to arise from Friction; but between the Particles of Fluid there can be no Friction; nor between the Particles of Solids can Heat be produced by Friction, if Fluids be interposed. Thus the Wheels of a Coach are prevented from generating Heat by greasing them.

2. By Fermentation (Dr. Stevenson) but the Fermentation of animal Substances does not produce Heat

3. From inspiring the atmospheric Air, this seems to be contradicted by the following Case.

A Man had a Contusion of his Brain, his Respiration was exceedingly slow, breathing not above five Times in two Minutes; yet he had a sensible Warmth upon his Skin though in February, & the Breathing was but thin. The Power of generating Heat & Cold depends simply on the Principles of Life independent of Circulation, the Influence of the Nerves &c. This is finely illustrated in the Case of a Gentleman who was seized with an apoplectic Fit; whilst he lay immovable in Bed & covered with Blankets his whole Body would in an Instant become extremely cold in every Part, &

continue so for some Time; & in as short a Time became extremely hot; this was going on for some Hours alternately yet there was no Alteration in the State of the Pulse, or in the Excitability of his Sensations.

The Heat of all Animals is diminished during Sleep & whilst in a State of Torpor but more or less in different Animals.

128. Variations of Heat in the Atmosphere will produce different Changes in the Heat of different species of Animals; some Animals, as Man, & those which are constantly in Action have their Heat little changed by this Variation.

In Animals which are in a State of Inaction during the Winter as sleeping Animals, the Heat varies with the Season. The State of the Hedgehog in Summer is from 91 to 97; In the Winter, when the Atmosphere was 44. the Heat of the same Animal was 45. The Experiment was made on its Pelvis.

Animals who suffer their Heat to be diminished with that of the Atmosphere, suffer it to be as readily increased to a certain Degree, as that of dead Matter. a living & a dead Carp were both placed in a Mixture of Snow & Water, which was gradually heated, & both received Heat one as fast as the other.

Different Parts of the same Body will have different Degrees of Heat, & different Powers of generating it. the projecting Parts of the Body in Man as the Nose & Penis will be colder than other Parts; the Urethra will be colder than the Rectum, & the [illegible] [illegible]. The Standard of Heat in the Centre of the human Body is about 99.

129. Animals will suffer their Heat to sink below the freezing Point, before they will be frozen! (Experiment on Eggs.)

130. The stronger & more healthy the internal Powers of the Animal, the more powerfully will it generate Heat.

131. Cold applied to Animals in a certain Degree, proves a sedative to the Powers of Life; but applied beyond that Degree, it proves a Stimulant and the Faculty of generating Heat is excited in an extraordinary Degree.

132. Excess of Heat may prove destructive to animal Life, as well as too great a Diminution of it: the Principle of Life is, therefore, endued with the Property of generating Cold, when the external Heat endangers the Life of the Animal.

3. Animals have two Powers of resisting Heat, the only ones of producing it they are by the Evaporation of Fluids, but as when Fluids become condensed on the Surface, instead of being evaporated, they will not answer ~~that~~ Purpose they have, which is of actually destroying Heat. As the Extremities, or projecting Parts are more subjected to be influenced by Cold, so they more readily allow their Heat to be increased, than the central Parts. From Dr. Fordyce's Experiments in a heated Room, it appears that

the human Body will for some Time bear Heat with Impunity, such Heat as is sufficient to boil Eggs, or roast Beef Stakes: The Gentleman present in it found that when they moved from one Place to another, in the latter they found the Heat also more intense, than that they had been some Time stationary in seemed to be when they left it. So also in the hot Bath, the Bathers find the Water immediately in Contact with their Bodies cool, & they must either have the Water agitated, or move into another Part of the Bath to procure the first Sense of Heat.

133. Neither Excess of Heat, nor Excess of Cold, will destroy the Life of an Animal, untill its Powers of generating Heat or Cold, are exhausted; then the Animal must of Necessity perish.

4. The Operation of generating Cold seems to wear on an Animal much more than that of generating Heat; before an Animal perishes in Consequence of Cold, Sleep is induced, an irresistible Propensity to which always comes on when the Powers of Action for the Generation of Heat are exhausted. The Case of Dr. Solander & the People with him at the Terra del Fuego is a manifest & melancholy Illustration of this. After bearing for a long Time an Excess of ~~Heat~~ Cold, several of the Dr.s Attendants found the Disposition to sleep, in spite of his Remonstrances, who was aware of the Co[illegible] [illegible]; they lay down

sleep, & accordingly died. At length Dr Solander felt & gave way to the same Disposition; he had not been asleep above five Minutes, before his Feet became so contracted that his Shoes fell off then & he lost the Use of his Limbs, he was however found, brought away to the Fire & relieved.

133 All the perfect Animals carry on their Actions in an Atmosphere below the Temperature of the Body, for it becomes a universal & healthy Action for an Animal to be constantly exerting itself moderately in the Generation of Heat.

134 Different Animals as above mentioned, either preserve a Standard Heat, or have their Heat increased or diminished with that of the Atmosphere; yet all Animals require a certain Degree of Heat for the Standard in which their Functions are best performed: many Animals are obliged to the Atmosphere for a Standard Heat, whilst Man & many of the perfect Animals, have, from their Faculty of generating Heat & Cold a Power of giving a Standard Heat to themselves.

a The best Atmosphere for the human Subject seems to be 63 to 60 - Bear & Fox 50 - Lion & Monkey, 70. The Animals inhabiting cold Countries have stronger Powers of generating Heat than the human, rendering every Part of their Bodies free from Injuries by freezing, whilst the human Man are losing their Feet, Hands, &c.

from Cold. Cold causes the Hair of the Bear &c to grow more faster & finer, hence they are better defended.

136. The Effects of a Climate will correspond in a great Measure with the Influence of the Sun in that Climate so that as the Climate is exposed in a different Manner to it is differently acted upon by that Body it will be hot or cold, moist or dry; or it will be hot & moist, or hot & dry.

4. Between the Tropics the Heat is greatest. In Islands the Heat or Cold is always more moderate than in Continents. Some Vegetables have a Power of living in both Extremes of Climate. Some Animals seem also to have this Power: perhaps Animals of Passage as Birds & Fish change their Residence more from Want of Food, than from the Inconvenience they feel from a given Climate.

Some Animals which have no Power of getting their Food in the Winter, Nature has given the Power of remaining during that Season in a torpid State. As the Power of generating Heat is not equal to the Degree of Cold, Nature has taken another Method of preserving Animals of the very frigid Climates with Down, Fur &c, which are bad Conductors of Heat: so also whatever Animals have their Bodies well covered with hard Fat, which is also, as Oils are, a bad Conductor of Heat.

Too much external Heat produces Diseases of the Liver, Spasms, Diseases of the Bowels, Tetanus &c

Diseases of cold Climates are more slow in their Action & many of them depend on Debility as Chilblains &c. Cold Climates also increase Diseases which they are not the Cause of, as the venereal Disease &c.

137. The Effects of Heat & Cold will be greater according to the Degree of the Surface of the Climate. a small Surface will be less hot or less cold than a Larger.

138. The Effects of Climates will be very great in animal Bodies; the imperfect Animals bear Changes of Climate very badly. Man & many Quadrupeds can accommodate themselves to almost any Climate; yet great Changes of Climate prove the Cause of Disease & Destruction, both to Man & those Quadrupeds, especially to the former.

139 Besides our being influenced by Heat & Cold our Bodies are surrounded by, & subjected to the Influence of the Atmosphere, which will always be of the same Temperature as the Climate we live in.

140. This Atmosphere having a Power of dissolving a Variety of Bodies, will be a Compound of many heterogeneous Particles.

141. The atmospherical Fluids having a considerable & powerful Influence on the animal Body, according to the Nature of the Particles of which they consist, they will materially affect the Health of animals.

142. All Bodies which the atmospherical Fluids take up & dissolve, are to be considered as in a State of Volatilization: to render Substances volatile some Degree of Heat is required; perhaps the lowest Degree is sufficient thus to act upon some Bodies; according to the Degree of Heat, the atmospherical Fluid or the Air will be enabled to take up, a greater Variety & a greater or less Quantity of Bodies.

143. The Purity or Impurity of the Air will depend upon the Quantity & Quality of Bodies dissolved in it, & its Capacity of dissolving them will be according to its Heat.

144 Cold Climates will be for the Reasons given (139. 140) be, caeteris paribus, found the purest Air & best adapted to maintain Health: warm the less.

145. Heat in warm & dry Climates has the Property of causing Bodies taken up by & dissolved in the atmospherical Fluid to be decomposed, & thus changing their Nature, renders them less noxious

¶. Thus the Plague, Jail Fevers &c are unknown. within the Tropics. Another Reason why hot Climates are not so subject to putrid & contagious Diseases as might be expected is, as the Termites as described by Mr. Smeathman, eating & destroying in a curious Manner amazing Quantities of dead animal & vegetable Substances; thus preventing them becoming putrid amongst to throw off volatile noxious Particles; for before any animal Substance can throw off noxious ~~Particles~~ Vapours to produce Contagion, it must be highly putrified.

146. Heat & Moisture especially when dead animal Substances are acted upon by the Air, produce the most unwholesome Atmosphere.

147. The Air will be injurious to the Health of Animals, by affecting them in three distinct Manners, viz.

1st By its being simply impure, it lessens the Fitness of them for their several Functions.

2d By its containing specific Particles of Contagion.

3d By its containing poisonous Vapour.

148. Habit, and Custom &c. — Prisoners have carried the Seeds of the Jail Fever & communicated it to others by their Cloathes, though they themselves were free from it; of this we have had memorable Instances at the old Bailey & at Oxford Assizes. Again Persons who have never had the Small Pox themselves have nursed others labouring under it with Impunity & have on visiting other People, who have never had the Disease, communicated to them the Contagion.

149 All irritating Substances will not act in a State of Vapor, or are not capable of Volatilization.

150. Water is in greater or lesser Quantities chemically combined with Air, when a Decomposition

of this Solution of Parts in Air, takes Place, Rain is produced: previous to this Decomposition Animals are sensibly affected, Beasts & Birds very much so; the human Subject unless unhealthy rarely perceives much Difference.

¶ Thus previous to a Shower, we see the Beasts running to the Covert, the Birds flying to the Thicket. People with Corns are capable of presaging the Decomposition of the Atmosphere, & also Parts labouring under great Debility.

Hence doubtless, People who have had Fractures have the Part where the Callus was formed, sensibly affected on Changes of Weather: is not this because new Parts are weaker than original Parts, as will hereafter be shewn.

1. The Decomposition of Substances in the Atmosphere may be succeeded by new Compositions from which various Effects may arise: hence to determine, a priori, the Effects of atmospheric Air, is extremely difficult.

152. Noxious Particles taken up by the Air from one Climate may be conveyed to another; thus Winds by bringing noxious Particles in their Current from distant Climates, may materially affect & alter the Salubrity of any given Region.

¶ The Harmattan, a Wind that blows from the interior Coast of Africa, shews how much Winds may affect animal Bodies, it continues from two or three to fifteen Days, returning three or four times a Year; it blows moderately; its accompanying Fog & Gloom are very considerable; surely this Fog & Gloom cannot be animalcula, as we do not find any Thing produced by them: not the least Moisture can be found in this Wind, it makes the Lips & or Fauces dry & chopped, if it continues three or four Days the Cuticle peels off, continuing a few Days longer the Perspiration becomes acrid, so as to the Taste: it is yet highly conducive to Health: Convalescents recover fast, also those labouring under Intermittents, Dysenteries &c are cured; it checks Epidemics; a Number of People were inoculated at the Accession of the Harmattan but the Small Pox did not appear some inoculated after the Wind ceased had it & recovered perfectly, except one Girl who died of a locked Jaw in Consequence of a large Ulcer from Inoculation.

153. Matter will be found either in a State of Perfection or Imperfection, if in a State of Perfection, health is present, if in a State of Imperfection, the Reverse or Disease takes Place; this Maxim is universal, & will therefore hold respecting Animals as well as inanimate Matter.

154. In Order to Disease being present, three Circumstances must take Place.

1st Susceptibility of certain Impressions.

2d. Disposition arising from those Impressions.

3d. Action in Consequence of a Disposition.

155. In Respect to these Requisites the Body bears a perfect Analogy to the Mind, which must be susceptible of Impressions, must receive Impressions, must have a Disposition arising in it, to which an Action of the proper Kind must succeed.

156. Susceptibility of Impressions is not sufficient alone to produce Disease, but Impressions of some Kinds must be received by Parts, endowed with that Susceptibility, which a Disposition being produced, an Action naturally succeeds.

[illegible] Disease being a Perversion of the regular Laws of Nature, observes less Order; therefore, their Phenomena are less easily to be explained, & accounted for, than natural Actions.

15[illegible] With Respect to the Changes taking Place in the Body, we know only the Cause of them & their Effects; we know not the Manner in which those Causes produce these Effects.

9. Thus a Strain gives Occasion to Scrofula, a Blow to Cancer &c, moreover, different Parts will be more or less able to resist ~~different~~ a diseased Action; this in general will be in Proportion to their Strength & Weakness: the different Parts of the Body may have their natural Actions very dissimilar; yet Disease may produce similar Actions in them, as, for Instance, the Lungs & the Liver have dissi-

milar natural Actions in them; yet Disease produces a Similarity of action, when they are affected with Scrofula, a Disease of which they are both susceptible, & which is not a specific Affection.

159. We can judge only from the Consequences of Impressions of the Degree of Susceptibility of the Mind & Body; the Causes of action in the Body bear a strict Analogy to the Causes of action in the Mind.

160 As the human Body is compounded of Parts very essentially different the one from the other, the Diseases of different Parts will vary very widely: so also the Constitutions of different Bodies greatly vary, & of Course the Susceptibility of different Impressions; in some, the Susceptibility for particular diseased Action, is so strong as only to require the habitual Actions to be obstructed to run into Disease.

161. Constitutions will be either universally subject to the same Action, as the indolent and irritable, or Constitutions will be subject to some specific Kind of Action, whether local or general.

162. Constitutions are both generally & locally subject to particular Actions.

163. Constitutions are subject to particular Kinds both of local & general Actions.

164. Constitutional Susceptibility may be threefold.

1st Universal Tendency for diseased Actions of some kind or other, where, however, the state must be in Action.

2d Universal Susceptibility of local Action.

3d Universal Susceptibility to fall into a universal Disposition, as though something was teazing the Constitution, as an inflammatory Fever &c.

165. Dispositions are natural, unnatural, or diseased; of the natural Disposition of the sensitive or irritable Parts, Instances are given in the Secretions of Glands.

The natural are divided into three kinds,

1st Disposition to Restoration in Parts injured, as in Fractures &c.

2d Disposition from Necessity, as in Ulceration

3d Unnatural Dispositions of all kinds, of which great is the Variety; the diseased Disposition is that which tends to the Destruction of Parts.

166. Every Disposition to diseased Action has a certain Time allotted to it in which that action will be produced, in some sooner than in others.

167. A Disposition once formed will go on to Action till its ultimate Action is produced, notwithstanding some Time intervenes unless the Disposition can be destroyed by some Change.

E. A Girl in the West Indies had a Disposition formed for Leprosy; it was some Time after she came to England that the Disease appeared; here there was a considerable Space between the Disposition & the Action of the Disease. In some specific Dispositions Years may intervene before the Action commences, as in Cancer.

We should not to confound Dispositions with Actions; Dispositions are properly the Disease, Actions the Effects of the Disease. Diseases may exist for a Time, though its Action is superadded as in Agues.

168. In Diseases, Dispositions & their consequent Actions are of three Kinds.

1st Where the Disposition has its Action frequently repeated without the Disposition itself being destroyed by that Action taking Place.

2d Where Disposition is destroyed by Action, and the Action ceasing, the Disease also ceases.

3d Where the different Action continues to go on without removing the Disposition untill the Progress of it be destroyed by Medicine.

9. In the first we have Instances in the Small Pox Measles Inflammations & Fevers; of the second in Agues, where the Disposition to Action continues, though the Action only commences & goes off at stated Intervals, the Disposition in the System for Action remaining undestroyed by the Action & untill it has lost its Power of

exciting the System to Action; the diseased Disposition existing as much between the Fits, as during them. Of the third we have Instances in some specific Diseases, as the venereal (Gonorrhoea excepted) Cancer & others, where the Disposition, notwithstanding the Action, continues to exist, because it cannot produce its full Effects; hence it will go on untill it destroys, unless the Disposition be removed by an immediate Increase of Action.

169. Two different and opposite Actions cannot go on at the same Time, neither in a Part, nor in the whole: if by Means of any Disposition, a new Action is produced, the first action ceases.

170. If two Dispositions be excited, not two different & natural Actions will be produced at one Time, but a third simple Disposition & consequent Action will be generated, which will be entirely & alltogether distinct from the other two.

Q. Of this we have an Instance in Dovers Powder, which consisting of Opium & Ipecacuanha, a narcotic & an emetic; Sleep & vomiting should be the Actions, but as two Actions cannot take Place at one Time, a Disposition to a third Action arises, which produces that third action & is called sweating.

171. Of Susceptibilities for Diseases, there will be great Varieties, as above said, / / for every

Disease there must first be a Susceptibility.

172. In Diseases either too great or too little a Degree of Action will take Place; & to these two general Kinds of Action all the Phenomena of diseased Action may be referred.

Q. Too little Action in any Part produces Weakness in it; which although not a Disease itself, becomes the Cause of Diseases. It causes Irritability & thus gives Rise to morbid & irregular Affections, as the locked Jaw &c. Mr Hunter says that if the Nerves are weak, the voluntary Parts suffer, if the Stomach be weak, the general System suffers.

173. Diseased Action will be common or specific. Specific actions follow certain determined Dispositions arising from peculiar Kinds of Impressions

Q. Inflammation arises from too great a Degree. If a specific Action accompanies it, a specific Inflammation will take Place.

174. When a Part unused to a particular Sensation, has that particular Sensation, the first Alarm or Knowledge of Disease is given to the Mind; but the Action of Disease is often so slow as not to be sufficient for a long Time to produce any Sensation in a Part.

Q. By increased Actions in Parts we become sensible of their Action, which before we were insensible of; thus Palpitations of the Heart makes us sensible of the Hearts Action; of this we have no Perception &c in the natural State of the Organ. The whole Body being subject to similar Actions with those arising in Parts as observed, 17 the first Attack of Disease is probably intimated to the Mind by the Feel of Health; previous to the Attack of some Diseases it is not unusual for Persons to be sensible of an uncommon Degree of Health & Spirits. Here the several Powers are, as it were summoned into Action to resist or destroy Disease.

175. The whole animal Body will be subject to many Actions & Degrees of Action, similar to what arise in Parts.

176. Whenever a Part heretofore subject to the Will takes on an involuntary Action, the Disease is called nervous.

177. Whenever the Action of a Part is superior to the Strength & Power of a Part, Debility & perhaps the Destruction of the Life of the Part will ensue.

178. a diseased Action in one Part may first produce a particular Sensation in another Part, then the first Knowledge of Disease will be conveyed to the Mind by Sympathy.

9. Sympathy will hereafter be more fully explained, but an Example in Illustration of the Fact may be given in the Pain in the Knee being often the first Symptom of the Disease in the Hip-Joint, or again in vomiting being sometimes excited

[illegible] by passing a Bougie through the Urethra though there is no Pain in it.

179. Actions are not hereditary, but Susceptibility of Impressions, the Cause of Disposition, the Cause of Action may be hereditary. Thus Diseases are not hereditary, but a Susceptibility of Impression which is to produce a particular Disease; it may be hereditary.

9. A Variety of Diseases have been considered as hereditary, but it is only the Susceptibility of any Disease; so that the Child shall be more susceptible of an Impression producing that Disease than other People: this is all that Parents can communicate to their Offspring. Mania has been supposed to be hereditary & in some it seems to arise spontaneously, without any apparent exciting Cause, or Impression; an Explanation of this will be found, where it is said that in some the Susceptibility for a given Disease is so strong that they will run into it, without any other exciting Cause, than simply some Obstructions to the natural Actions. The Small Pox is equally hereditary with Mania or Scrofula. The Gout is also considered hereditary, but it is in general otherwise & brought on by Irregularities in living: but it sometimes arises in Persons under eighteen; then it must be considered as hereditary in the same Manner, that

we have considered Mania to be hereditary, viz to originate from a strong Susceptibility of the given Disease, ready to take it without any visible Cause, & only from some unseen one, as the least Obstruction to the natural Actions. The Gout is a Disease of the Constitution, untill it falls upon a Part, & then the full Action being there produced, the local Affection relieves the Constitution.

180. When the different specific Impressions, naturally productive of two distinct specific Dispositions, are given to the System, two distinct Dispositions to specific Actions may be formed; but the Action of one will be suspended during the Action of the other; that being finished the suspended Disposition may produce its Action.

g. The Small Pox & Measles cannot subsist in Action at the same Time, but one Disease will be prevented from Action, untill the other has gone through its natural Course.

Case 1st — Mr Poole was inoculated for the Small Pox in a few Days the Redness around the Puncture appeared; but he was attacked with the Measles, which suspended, for a considerable Time, the Eruption of the Small Pox, which, however, on the Decline of the Measles appeared & went through its usual Course.

Case 2d. a Lady was inoculated for the Small Pox, the Measles appeared soon after, & the farther

Progress of variolous Infection was suspended untill the Measles were over.

Case 3d — A Boy was inoculated & the same Events took Place.

181. Actions must always correspond with Dispositions; if the Dispositions be simple, so will the Actions also.

182. Too great or too small a Degree of natural Action will cause a Disposition to Disease.

183. In Health there must be both a due Degree of Strength as well as Susceptibility of Action; moreover the Actions must always be in Proportion to the Strength.

184. The human Body is continually undergoing some Changes; it has been considered to be either in an increasing State, as between Birth & Manhood, when its Parts are continually increasing either in Bulk or Firmness; to be stationary, or preserving with little Alteration, its Strength & Firmness during a certain Period; & or lastly to be decreasing, when it loses gradually its Vigor & Firmness. But these three States or Conditions of the human Body, are not explained by Proofs; it is difficult to say when the Body, in all its Parts, is arrived at its perfect State, & it is difficult to say that the Body, as soon as it has attained to its perfect State, does not begin immediately to suffer; though for some time an insensible, yet a real & gradual Decay

105. It is certain, however, that at different Periods of Life, the Susceptibility of the Body for different Dispositions, will be very different; hence different Ages will have Diseases in some Measure peculiar to themselves, & these may be divided into

A. the Diseases of Youth.
B. the Diseases of Manhood.
C. The Diseases of old Age.

106. The Diseases of the first & last Stages are many, those of the second are fewer.

4. The Diseases the first Stage is particularly subject to, are Scrophula, consequently diseases in the Lungs, Complaints in the Bowels from Worms &c, Hydrocephalus. The young are more disposed to local & especially universal Sympathy.

The middle Ages have few specific Diseases, if we except nervous & hypochondriacal Disorders; they are, however, accidentally attacked with the Complaints of Youth & Age, & this lays a Foundation for Disease in a more advanced Age.

In the aged we have a Variety of Disorders; since the necessary Actions are not well performed: proper to this Stage are Cancer Calculi in the Bladder & Gall Bladder & Ducts, Ossification of Arteries &c

107. The Causes producing Dispositions to Disease are many & various; these Impressions are given

which are to produce diseased Dispositions, the Disposition will vary very much according not only to the constitutional & natural Susceptibility of the Body, but according to other Circumstances.

188. Whatever can affect or alter the natural Susceptibility of the Body will produce Variety of Disease, therefore the Differences of Climates & Seasons, the Moon, the Atmosphere, will produce Differences of Disease, & each absolute State of Climate, Atmosphere, Moon & the Year, will have Disease or Appearances of Disease peculiar to itself: moreover, Affections of the Mind will produce diseased Actions; the weaker the natural Powers of Action in a Part are, the less able will that Part be to resist Disease, therefore, Tendons, Bones &c have less Power to resist Disease than Muscles &c

Climates

Climates are hot, cold, and temperate; in hot Climates the involuntary Actions are carried on with more Violence, whilst the voluntary Actions are more sluggishly performed.

So diseased Actions are carried on with more Rapidity & Violence, hence Diseases run through all the Stages in those Climates, faster than in others; when Disease kills ~~absolute~~, absolute Death, that is Putrefaction, quickly succeeds visible Death. Cold Climates have not such a tenriety of Diseases as hot ones, neither is the Progress of them so rapid. Cold invigorates the voluntary Actions, at the same Time it lessens the violence of the involuntary ones.

In cold Climates simple Life is not destroyed untill some Time after visible Life is departed, for Putrefaction does not so soon follow as in hot Climates.

Temperate Climates from the Irregularity of the Medium between Heat & Cold, furnish us with a greater Variety of Diseases than either of the others. Hence Scrofula, Colds, Agues & such like Diseases abound.

Seasons.

We may consider a Change of Seasons as a Change of Climate, & as in Changes of Climate, Dispositions formed in one Climate, by Removal into another are retarded from coming into action, so upon returning to one similar to the first, they go through their Actions.

The Spring, as it were, ripens Diseases & brings them into Action, for a Disposition may be formed during a Season, which had not sufficient Influence to bring it into Action, as the Winter; but in a Season more favorable to the forwarding that Disposition, as the Spring, that Disease has been brought into Action. So also it is in Climates.

The Moon becomes often the immediate Cause of Diseases, especially those in which the Mind is par ticularly concerned, as in Madness, which is always more violent at certain Times of the Moon: The full of the Moon also affects People whose Brains have been injured by an external Violence: this was instanced in a Lamp lighter, who received a Fracture of the Cranium with Concussion of the Brain; he was trepanned & recovered, but ever after found himself much affected at the full of the Moon. The Seasons of the Year affect the Influence of the Moon on the human Body; the Lamp lighter was additionally affected in Spring.

A Person of very scrofulous Habit was very subject to Deafness at the full of the Moon, except in Autumn.

Affections of the Mind.

Every Action, voluntary or involuntary, may be affected by Changes in the Mind; or by a peculiar State of it, blushing may be produced; other States of it excite vomiting, Sickness, Irregularity of Pulse, Diarrhoea, Discharge of Urine, Spasms &c.

The Diseases on which the Mind has the greatest Influence, are those in which Increase or Diminution of Action takes Place without any Alteration in the Structure. Constitutions that are called irritable, have the active Parts more under the Action of the Mind, & less under the Command of the Will: the State of the Mind greatly affects the involuntary Actions that have already taken Place in Consequence of Disease. Agues have been

cured by Affections of the Mind; local Affections are
even altered by the same Means; Tumors have
been cured by rubbing them with a dead Man's
Hand.

189. Diseases are

A. Local.

B. Constitutional

or

C. Fixed.

We judge of the Presence & Nature of Diseases by their Symptoms. A Symptom is a sensible Effect of a peculiar Action. Symptoms are either to be referred to the Mind or to the Senses. The former are only known by the Patient, as Pain &c, the latter are perceptible to the Physician, as the State of the Pulse &c

When the Symptoms are not expressive of the Disease, we call them anomalous; Symptoms are either local or universal.

190. In simply local Diseases, a Part may suffer, the general Health of the Body still remaining unaffected; in the Mixed both a Part & the Constitution are affected.

191. Diseases may be originally local, or originally constitutional, or again they may be constitutionally universal, or constitutionally local, or lastly, they may be originally local, & at length affecting the general System, become constitutional.

192. The originally local (191) & the originally con-

stitutional may arise in the same Person, at the same Time independent of one another.

193. Dispositions, as above said, must be formed previous to the Existence of Disease, so that there will be Disposition to produce originally local Effects, an universal Disposition to produce local Effects &c

194 An originally local Disease may take on a Part of a constitutional one, when the former has been only commonly diseased Action; but a local specific Disease will not take on a Part of a specific constitutional Disease, unless the latter has superior Powers, in which Case the former local Action will be suspended during the Presence of a new specific Action.

195. A constitutional Disease may be the Cause of increasing or diminishing a local Disease, & a local Disease may be the Cause of increasing or diminishing constitutional Disease.

Q. This should seem to refer only to common diseased Action; of this we have an Instance in Fevers curing or increasing an Ulcer, or a Sore increasing.

196. It frequently happens that a local Disease disappearing, some other will appear.

197. A diseased Action once formed, will go on increasing until either it is destroyed by a new Action being induced in a Part or Constitution, or unless the Parts to which it is spreading lose their Susceptibility of the Disposition to that Action,

or until it produces an Abolition of Life.

198. Disease will be either common or specific.

199. We cannot increase specific Diseases unless we can increase the Susceptibility of ~~Disposition~~ the Constitution of those Diseases; every specific Disease will have two Modes of Action, the specific & the common.

200. If the Constitution or a Part be susceptible of Impression from a peculiar Stimulus & a peculiar Disposition is excited, then a specific Disease may be produced & that specific Disease may be either local or constitutional.

201. When A an Impression is given to any Part susceptible of Action, & the Action is not produced in the Part, to which the Impression was given, but in some other Part; or B - when an Action formed in one Part produces an Action in another Part, or when an Action is formed in one Part & the Sensation resulting from that Action is felt in another Part, Sympathy takes Place.

Ex. A. As in Disease of the Hip, where it is no uncommon Thing to have the Patient complaining of his Knee.

B. As when a Stone in the Kidnies produces Sickness & vomiting; as when an Impression is given to the Urethra the Testicles become swelled though at the Time they shall be free from Complaint

202. The Part (201) receiving the Impression, is the Sympathant, the Part in which the new consequent Ac

tion or Sensation arises, is the Sympathiser.

203. A — Sympathy is simple or compound.
B — Similar or diſsimilar.
C — Regular or irregular.
D — Natural or unnatural.
E — Real or Delusive.
F — Partial or universal.
G — Contiguous continuous, or remote.
H — Common or uncommon.

204. The more simple the Structure of the Being which is the Object of the Operation of Sympathy, the more simple will the Sympathy be found; even some Vegetables are susceptible of it. the sensitive Plant, whose Leaves succeſsively dropping on Approach of the Hand, arises from this simple Sympathy between the different Leaves, in succeſsive Order sympathising with one another.

205 – In the more compound Beings, as the perfect Animals, the Sympathy may be more complicate for an Impreſsion being given to one Part be-comes the Cause of Action in another Part the Action in the last Part becomes a Cause of Action in the third Part & that again in a fourth Part; hence in many Animals Sympathy may become exceedingly complicate.

206. When a Part receiving an Impreſsion, an Action is formed in it, & a like Action is consequently

produced in another Part, the Sympathy is similar but when the Action in the one or Sympathizer is different from the Action in the other or Sympathant the Sympathy is dissimilar.

i.e. if one Part be affected with Pain & another Part by Sympathy gives the same Sensation, then the Sympathy is similar & vice versa. A Pain in the Testicles producing by Sympathy Sickness in the Stomach, the Sensation & Action in the latter being different from those of the former the Sympathy is dissimilar.

3dly. When an Action of a peculiar kind in the Sympathizer has always been observed to produce an Impression & Action of a peculiar kind in the Sympathant, such an Action in the Sympathizer arising consequent on the Impression & Action in the Sympathant is called common Sympathy; as also when a particular Part being the Sympathant, another particular Part has been observed to be constantly the Sympathizer.

We observe affections of the Brain produce Sickness & vomiting, & this almost invariably: here we have an Example of common or ordinary Sympathy. By attending to this Division of Sympathy, we learn a Knowledge of the Symptoms of Disease. Some common Sympathies Natural but few arise in Consequence of Disease only, & are therefore unnatural, such is the Sym pathy between the Shoulder & the Liver, between which in Health there seems to be no Sympathy.

208. When an Action of an unusual Kind arises in a Sympathizer or when the Sympathizer is a Part roused to Action consequent on the Action in a given Sympathetant, uncommon Sympathy is said to arise.

209. Sympathy is natural when the Sympathetant receiving an Impression not productive of Disease, & healthy consequent Action is produced in the Sympathizer; thus the Breasts of Women are affected previous to the coming on of Menstruation.

210. Unnatural or Diseased Sympathy is when an Impression given to the Sympathetant produces an Affection of the Sympathizer inconsistent with its healthy or natural Action; so scratching an Spot in the Thigh which itched has produced a Difficulty of Breathing & a Pain in the Breast.

¶ The Father of the great Lord Chancellor Clarendon had a Stone in his Bladder, he was afflicted with it many Years & when it was painful was always accompanied with a Pain in his Arm.

211. Sympathy is real, when the Mind refers the Affection or Sensation produced, to the proper Sympathizer, & delusive when the Mind refers the Sensation, Action or Affection to a Sympathizer be-

tween which & the Sympathant no possible Connexion can exist. Thus when a Man under Ideotism or Delirium, has an Impression given to any Part of his Body, & his Mind believes the Sensation consequently produced not to exist in himself but in some other Person, he is under a Delusive Sympathy.

Q. A Man in a Fever & Delirium, when he wanted to go to Stool, always signified to the by standers, that some other whom he talked of or pointed out wanted to ease himself, referring his Sensation to some other Individual.

212. Sympathy is partial, where one or more Parts of the Body are Sympathisers, some given Part being also the Sympathant. It is universal when an Impression being given or an Action excited in any Part, the whole Constitution sympathizes with it; so a Wound being made in the Knee, a Fever which is the Action of the Constitution sympathizing with a Part, will often arise.

213. Sympathy is continued, when a Part receiving an Impression & a consequent Action arising in it, the Parts immediately joining & connected with it, are also thrown into Action; thus when an Inflammation arises in a Part of the Skin, & spreads wider & wider the Parts of the Skin to which Inflammation spreads from the first Point are suffering by continued Sympathy.

214. Contiguous Sympathy arises, where an Impression

being given to, or an Action excited in a Part, the Part or Parts contiguous to, but not joined & immediately connected with the Sympathant becomes the Sympathizer. Thus an Affection of the Integuments of the Abdomen will produce consequent Affections of the Bowells.

215. The sensitive Principle, the Principle of Life & the Mind mutually sympathize with each other, so that Affections of the one will produce Affections of the other, or of both the others.

216. Remote Sympathy is where the Part which is the Sympathizer is distant from the Part which is the Sympathant, as when a diseased Testicle should produce a Sickness at the Stomach.

217. Some Parts are more particularly disposed to become Sympathizers than others, the Stomach will sympathize with any Part of the Body.

218. Particular Habits are more disposed to universal Sympathy than others; the less determined is the Disposition to partial Sympathy, the greater will be the Disposition to Irregularity and Universality of Sympathy. Thus Infants are peculiarly subject to universal Sympathy, because when an Impression is given to any Part of their Body, their partial Sympathies not being yet settled or determined no particular Part is disposed to become the Sympathizer, but the Constitution takes up the sympathizing Action

219. The Strength of regular & partial Sympathy will be greater in Proportion to the Strength of the Powers of Life & vice versâ.

We must remark on the Text "that the Strength of regular & partial Sympathy will be in the Ratio of the Powers of Life." I think here we must make a Distinction between a Readiness or Susceptibility of Sympathy & a Strength of Sympathizing Action; perhaps debilitated & more irritable Persons & those in whom the Powers of Life are weakest, are the most ready to fall into Sympathy of every Kind; but the Strength of the Sympathizing Action will in them be but little because the Sympathizer can have but little Powers of Action.

220. The Affection of the Sympathizer will often be more violent than the Affection of the Sympathicant; but this will depend upon the Number & the Nature of the Part & Parts taking up the Action of the Sympathicant, & thus becoming the Sympathizer.

If the Brain sympathizing with some other Part, Convulsion, Epilepsy, or a sudden Abolition of the visible Life may be the Event; the Action in the Sympathizer being here more violent than in the Sympathicant.

221. The vital Parts are particularly disposed to mutual Sympathy between one another; the farther Parts which are Sympathicants are removed from the Heart, the greater will be the Disposition of the Constitution to sympathize

the Stem.

Thus in Diseases of the Extremities, the Constitution is exceedingly ready to run into hectic Fever, as in white Swellings of the Knees, Elbows or Ancles, but the latter Part of the Text in this Paragraph can only refer to the non-vital Parts, for the Constitution is always most disposed to sympathize when a Part necessary to Vitality is affected.

222. Sympathy being only a secondary Action, will cease when the first Part is destroyed, thus in a diseased or ulcerated Joint be attended with hectic Fever, quick Pulse, restless Nights &c, almost immediately after its Removal by Amputation the Pulse grows slow & calm & the Patient recovers his Sleep.

Instances of mutual Sympathy are but few, the Stomach will indeed sympathize with the Head & the Head with the Stomach; but the Liver is perhaps never the Sympathizer when the Shoulder is affected, though a morbid Change in the Liver, produces very commonly an unusual Sensation in the Shoulder.

223. Sympathy is of many & important Uses in the Operations of Life; it connects the Principles of different Parts, it enables one Part to assist ~~thean~~ another in the Expulsion of offending Matter; it enables one Part to assist another in the Performance of its Operations, probably when one Part is affected with Pain by enabling another to take on Pain also, and

time and during the Sensation it loses its Violence; as the same Quantity of Pain being concentrated in one Part, might be insupportable to the Animal, but by its being diffused over other Parts the Animal is enabled to endure it with less Pain.

224. Sympathy leads us to the Knowledge of the Cause, Nature & Seat of Diseases, by showing in what Manner one Part becomes affected from a prior Indisposition of some other Part; we learn frequently from the Sympathizer the State, Situation, & Manner in which the Sympathant is affected.

225. But Sympathy often leads us astray, & causes our Judgement to err; when the Sympathizer is only sensibly affected, we too frequently refer the Disease to it entirely, overlooking or not suspecting the Sympathant, (see the Notes) We are, moreover, often led to imagine, from considering the Phenomena of Sympathy, Parts to be Sympathants, which are free from the Action in Question; so also when the Mind of the Patient has been long habituated to a particular Idea, it frequently, but falsely refers many Sensations to the same Cause that has given Rise to that particular Idea, which sometimes arise from other Causes.

Ex. Thus a Man having been used to Fits of the Gravel, if seized either with a Pain in the Back or Loins, from any other Cause, refers his Pain to nephritic Affection. See Symptoms.

226. When Medicine or artificial Means are employed for the Removal of Diseases & produce either a partial or universal Effect, it is to be considered as a Kind of Violence done either to a Part or to the Constitution.

227. Before a Medicine can produce any except mechanical Effects upon the Constitution it must be reduced to a State of Solution.

228. There is one Property only in the Juices of an animal Body which is common also to one Fluid out of the Body, & by the Solubility of Substances in which Fluid we can judge of their Solubility in the animal Juices; now all our Juices are more or less of a watery Nature, hence Substances soluble in Water, will also be soluble in the animal Fluids.

229. But not only the Substances, 219 are soluble in the animal Juices, almost all Substances are so in a greater or lesser Degree, & most of them are so in the Mouth, as we know by their giving the Impression of Taste, previous to their doing which they must be in a State of Solution, no Substances having any but a mechanical Action on a Part, which are insoluble in the Juices of that Part, 228.

230. Many Substances are soluble in the Stomach, though insensibly as Earths, which are neither soluble in Water, nor in the Saliva, &.

consequently are insipid.

231. For a Medicine to produce universal Effects it must be dissolved in the Blood.

232. The Blood is a kind of universal Menstruum, few Substances being found incapable of Solution in it. Its Properties of retaining at once so many Substances in a State of Solution, may arise from its heterogeneous Nature, for it is well known that a Fluid, that has dissolved me Substance, though it will perhaps take up no more of that Substance, yet will even by means of that Substance, be enabled to dissolve a second Substance, for which it had, otherwise, been an improper Menstruum; thus Water when pure, will with Difficulty dissolve corrosive Sublimate, but a saturated aqueous Solution of Sal Ammoniac will enable the Water to dissolve abundantly more of the Sublimate than in its elementary State it would have done; so also Water impregnated with fixed Air to Saturation, will still dissolve other Substances; even such as unmixed it would not have acted upon.

233. Medicines dissolved in the animal Juices have a Power of influencing both the nervous & living Principle

234. Medicines perform their Operations by their

a. stimulating
b. irritating — or

& sedative Powers,

are by the animal Body having a Susceptibility of their Operation, but never produce any Change unless when they act as Caustics by any chemical Operation.

23$\overset{5}{4}$. The Powers a. b, 234, are to be found in the same Medicine the Quantity in which it is applied only making the Difference.

235 - Stimulating Medicines only produce natural Action, or increase one already present; irritating Medicines alter the Mode of an Action already present; sedative Medicines diminish Action whether natural or unnatural; each of these may produce both partial & universal Effects.

237. The Influence of Stimulants will be as the Power of the Stimulant & the Nature & Sensibility of the Part taken together; the same will also be the Influence of an Irritation.

238. The Influence or Operation of the same Medicine in different Parts, will be extremely different, so also the Action of Medicine on a ~~sound~~ Part will differ from its Action on the same Part, when in a State of Disease.

239 In order to understand right the Influence of Medicine, we must consider Parts as capable of four Actions

viz

1st The Action of Health.

2d The Action of Irritation on Health.

3d The Action of Disease.

4th The Action of Irritation on Disease.

240. Irritation acting upon Health produces diseased Action; Irritation acting upon Disease produces or restores Health.

241. As Parts are susceptible of a Variety of diseased Actions, the Removal of one diseased Action will not always produce a Return of Health; a Disposition to some other diseased Action may have been formed, & wait only for the Removal of the present diseased Action, to go on to its proper Action; one Action can only exist at one Time. / /.

242. The Irritation of Medicine or Disease, may although it removes the present Disease, even induce a Disposition to some other diseased Action, which as soon as the first Action ceases may go on to its Action.

243. From (241. 242.) it is evident, we should be careful to discriminate the Consequences of Disease from the Consequences of Cure, we may otherwise persist too long in any Mode of Cure.

244. The Powers of the living Animal may also be affected by mechanical Means. — The Operation of mechanical Means may be reduced to two Species, viz.

a. That of Pressure

b. That of Friction.

245. Both a and b (244) produce the same ultimate Effects as Medicine.

246. Pressure seems to impede Action; it is also of Use as a Stimulus; if applied more forcibly it irritates.

247. Friction does not seem to impede but excite Action, if violently applied it irritates, if gently it stimulates.

Q. Friction can be applied to larger Surface than Pressure.

248. Medicinal Applications may produce their Effects, either simply by Contact or by exciting Sympathy.

249. It is rarely that Medicines act simply by Contact, their Influence being carried by Sympathy generally much farther than the Parts to which they are immediately applied.

250. The Effects of Medicines acting by Sympathy may be thrown into the same Divisions as the Actions of Sympathy; (particularly, they will act by continued, contiguous, or remote Sympathy.

251. In directing the Administration of Medicine it is necessary to have Respect to the Strength and Weakness of the Part or Constitution, and to the great or too little Action of the Part or Constitution.

252. As in Health the Action of a Part must be

always in due Proportion to its Strength; so in our Endeavours to restore Health when impaired we must always endeavour to proportion the Degree of Action to the Degree of Strength.

We must never increase Action when Strength is deficient, with endeavouring to increase Strength likewise.

253. A. Strength & Action may both be diminished or increased. B. Action may be increased & Strength at the same Time may be diminished.

In one Case A it must be our Care to increase both Strength and Action.

In the other B we must either reduce the Action to the Strength or increase the Strength so as to level it with the Action.

254. Weakness and Want of Action are not the same. A Part may have Weakness & yet too great Action; we judge more readily of too great or too little Action than of Strength and Weakness, because the former are Effects, the latter are often Causes.

255. Medicines may act by Contact, 249, or by Sympathy ( ).

256. Medicines may also be absorbed (see Absorption) and when absorbed will again exert their Action by Sympathy or by Contact; by Contact they may affect either the Lymphatics of the Part, or as much of the Lymphatic System as they pass through; or again when mixed with the Blood, may

by Contact affect the Constitution in general.

257. There are also Applications which penetrate beyond the Surface to which they are applied, as Heat, Cold, Electricity.

258. Heat increases the vital & involuntary Actions; though it is considered as penetrating, it cannot produce that Effect beyond a certain Degree, because the Animal is incapable either in a Part or in the whole of receiving or containing a certain Portion of Heat.

259 With Respect to Cold, also, the same reasoning will apply; the animal Powers whether in a Part or in the whole, will neither receive nor part with more than a certain Quantity of Heat, that is without Destruction of its Principle of Life.

260. Electricity indeed, in every Capacity of the Animal, is universally penetrating, as no Circumstance or Difference in the Capacity of the Animal can obstruct its Passage.

261. Cold, Heat & Electricity are capable of powerfully exciting Action, we must therefore be extremely attentive to the Circumstances and Degree in which they are applied, least we sometimes excite an Action superior to the Strength.

262. In the first Instance [illegible] it produces Heat in which it agrees with the warm Bath with this Difference that the Latter in some Measure gives Heat to the Animal, the former obliges the Animal to produce its own Heat, hence the

Powers of generating Heat are increased, the Consequence the Actions of Health are in general increased; those Effects shew the Animal is in full Powers of Restoration.

As the Causes of these Effects are instantaneous, so the Effects will be but temporary, thus the cold application must at due Intervals be repeated.

264. In the second Instance (262) it proves a sedative & weakener, where the Parts to which it is applied can give no Alarm to the Constitution, or the Parts or the Constitution have their Powers of generating Heat diminished; here all the consequent Actions will be the Actions of Weakness.

265. Cold may produce various Effects, vide Treat.

266. Heat is either absolute or sensible, the Latter we shall here notice.

267. We judge of the Degrees of sensible Heat by our Senses or by Measurement; this sensible Heat is either native or foreign.

268. Foreign Heat in its Application will produce different Effects, as it is applied simply or compounded with Bodies capable of themselves of exciting Action.

269 Foreign Heat is applied with two Intentions. viz.

1st. To increase the Warmth of the Animal

2d. To act upon the Principle of Life.

Heat has the general Property of increasing the

Violence of the involuntary Actions.

9. For the general Properties & Effects of Heat & Cold in Animals see the Text & Notes on Heat, Cold, & Climates.

270. According to the Degree in which it is applied it will be either irritating or sedative.

271. Substances compounded with Heat are applied either in a dry or a humid State.

Heat in dry Vapors can be medicated with Essential Oils, Spirits &c; the warm Bath is an Example of humid Bodies compounded with Heat.

272. The Bath is generally used with a Degree of Heat somethin below that of the Animal, or in a Degree above it; the former is called the tepid Bath, the latter the hot Bath.

273. The former seems in general to soothe the Skin, & by Sympathy to affect other Parts with an agreeable Sensation; hence it rarely debilitates nor does it, in general, excite any increased Action, further than simply freeing a Part from Disease.

274. The hot Bath produces more powerful Effects; by exciting an increased Action on the Surface, it may produce Relief to the internal Parts; if continued for a length of Time it produces Weakness, but not commonly a permanent one.

275. It is observed above ( ) that different Parts will be more or less able to resist Disease. In the

same Manner, in different Parts when diseased there will be more speedy or slow Advances towards Health, & this from the same Cause, viz the Difference in Strength & Weakneſs.

276. Parts in which Actions are excited with the greatest Difficulty, fall into Disease more slowly, & when diseased are more slowly restored to Health.

q. Muscles heal or are restored to Health more readily than Bones & Ligamentous Parts; the cellular Substance will take on the healing Proceſs more readily if placed between two Muscles, than if placed about Tendons, or Bone &c taking on, in general, the Disposition of Parts it is subservient to.

277. Touching the Slowneſs or Readineſs with which Parts diseased recover their Health, much will depend on their Situation in the Body.

278. The Power of healing, or the Facility with which Parts diseased recover their Health, will also be different during different Ages, other Circumstances being similar.

279. This Power (278) will be greater or more active during the Growth of the Subject, than after the Growth is stopped; during the middle Age, or that which is called stationary, (though this is not well ascertained,) the Power of healing is less active; but it will be the least active of all, during the State of Decline, when the System seems to take on a retrograde Motion & Nature begins to

unbuilt.

280. It frequently happens that one Disease will prove the Cure of another.

281. One local Disease being ~~removed~~ produced may remove a prior local Disease; a constitutional Disease arising may prove the Cure of a local Disease; and a local Disease arising may cure a constitutional one.

282. Constitutional Diseases cannot be cured whilst Parts are continually adding to the constitutional Affection.

Q. a Scrophulous Joint, an ill conditioned Ulcer, an Ulcer in the Lungs, or any similar Cause produce a constitutional Affection, & these existing in such a State, the constitutional affection cannot be removed.

283. When Loss of Substance happens in any Part & that Loss is to be restored, the Parts which restore the Loss or which regenerate the Substance to fill up the Loss, in their Action for that Purpose, preserve the same Disposition with which they were at first formed.

Thus the Cranium is at first membranous & afterwards, in due Time, becomes bony, & its Bones shoot in Membrane; if by Fracture or other Violence a Part of it is removed, in the Restoration first Membrane is formed & afterwards Bone; so in the cylindrical Bones, as they were at first cartilaginous, when Restoration, in Consequence of Injury, becomes necessary, the Union is first by Cartilage afterwards by Bone.

284. The Law /283/ does not, however, universally hold good, as Circumstances being present may prevent its Operation.

Q. If a Part of a Tendon be destroyed, as by Wound &c. the Injury extending in other Parts as Skin, and Cellular Membrane &c the Process of Restoration being begun, the Union will not be formed by Means ~~of~~ a Regeneration of Tendon.

285. Inflammation is an increased Action in a Part; it is difficult to determine whether it differs from common Action in a Part except in Degree.

286. Inflammation is the first Principle in Surgery; it is the Cause of many local Diseases; it is the Means of preventing the Increase of many local Diseases, & it is often a powerful Instrument in their Cure; its Operations are chiefly performed by the small Vessels, the larger ones doing little more than bringing Blood to them.

287. It may be divided into

1st. The healthy.

2d. The unhealthy.

The first, that which is attendant on any healthy State of a Part or of the Constitution, the other, that which attends on an unhealthy State of the Part or Constitution.

288. It may be divided into

1. Single
2. Compound.

The first, the Action of Inflammation alone, the second the Action of Inflammation with the Modes of Action.

289 It may be divided according to its Effects, into,

a - The adhesive.
b The suppurative.
c The ulcerative.

290. The Parts subject to Inflammation, are

a The cellular Membrane & circumscribed Cavities.
b All the Canals & Outlets of the Body.

291. The three Stages or States of Inflammation may have a fourth superadded, viz, that of a specific Disposition to Scrophula.

292. In the Order (a. 290). the adhesive generally begins first, the suppurative & ulcerative are its Sequels. In the Order (b. 290) the suppurative begins & the adhesive or ulcerative follows.

293. In the adhesive Inflammation, coagulable Lymph is by the increased Action of the Vessels speedily thrown out between the Surfaces of the Parts inflamed, & becomes a connecting Medium, glues the Surfaces of the Cavities to one another, & thus entirely obliterates them.

4. By the Effusion of coagulable Lymph, and its

glueing up the Cavity, or confining the Extent of the Inflammation, is formed, in Fact, a Cyst to contain the purulent Matter when formed; hence we see how Matter is confined to one Spot instead of being widely diffused; by it also is formed a Cyst round Musket Balls, Pins, Glass &c

294. Inflammation is frequently carried on further than the adhesive (293.) & then it may terminate in what is called Resolution.

295. The adhesive Inflammation often prevents an Increase of local Disease, it sets Bounds to its own Progress, & it prevents the Diffusion or Extent of the suppurative Inflammation when it takes Place.

296. The coagulable Lymph thrown out in Inflammation (293) always partakes of the Nature of the Parts which separate it.

297. The Termination (294) does not always take Place, when it does not happen, if in the Violence of the Action, the Death of the Parts does not ensue the suppurative Stage takes Place.

298. The suppurative Stage will arise, when the Death of a Part has actually taken Place but the surrounding Parts have not suffered the same Abolition of their vital Principle; here indeed the dead Part may be considered as a foreign Substance & as a Stimulus to Inflammation to

those that surround it.

299. Particular Circumstances arising in different Parts of an animal Body, the Parts may be disposed to absorb themselves & so to produce a Solution of Continuity; the Inflammation attendant on this Action is the ulcerative, (28$1^{c}$)

300. This is commonly the Sequel of the suppurative Stage & therefore, may, for the most Part, be considered rather as a Consequence of that Stage, than as the Affection of an original Disposition in a Part.

301. This (300) is not, however, always the Case, it sometimes arising without a Part previously undergoing suppurative Inflammation.

302. The general Order in which Inflammation proceeds in the cellular Membrane (29$0^{a}$) is,

1st Adhesive
2d Suppurative.
3d Ulcerative.

303. But this Order is not always observed, the suppurative Inflammation will sometimes arise, without the adhesive previously taking Place; here the Disease & the extravasated Fluid will be widely diffused; this is the Case in all the erysipelatous Suppurations.

304. In the Canals or Outlets of the Body ($\overset{290}{390}$) the suppurative generally begins, the ulce=

rative follows, to which the adhesive succeeds.

9. When Inflammation attacks the Canals, it rarely goes beyond the suppurative Affection; as those Parts do not readily fall into Ulceration, Adhesion will arise still more rarely; the ulcerative Inflammation being in these Parts so uncommon, Granulation of Course will as as seldom be found to take Place.

305. The erysipelatous Affection attacking the Parts, the Order, here also is disturbed, the adhesive or ulcerative arises first & the suppurative succeeds.

306. Whatever can increase the Violence of the Parts, the Action may be called a Cause of common Inflammation.

307. A Part will take on the Affection of the Constitution, that is an universal Affection may become a local one, hence, therefore a Cause of local Inflammation may be traced.

308. The Abscesses arising after the Termination of specific febrile constitutional Diseases, as small Pox, Measles &c have Nothing specific in their Nature, they only arise in Consequence of the common Disturbance, the Constitution has suffered from the Fever of the disease.

309. Simple inflammatory Fever may be followed by an Abscess in the Part '308'.

9. This arises from a particular original Disposition in the Part, brought into Action by the Fever, or by a Part taking up an universal Disposition.

$3\overset{10}{08}$. The remote Causes of Inflammation are four. viz.

1st From accidental Violance.

2d From Irritation applied to the Part.

3d From a particular Disposition in the Part itself.

4th From a general State of the Constitution affecting some particular Part.

311. Many Constitutions have a Disposition to specific Inflammation & will fall into it, when ever any exciting Cause shall arise, as in Scrofula & Habits subject to Erysipelas.

312. Many Parts of the Body have a greater Tendency to specific diseased Action than others, so any constitutional affection arising, these will readily take on a specific diseased Action.

313. Specific Inflammation may be

a Specific & healthy.

or

b. Specific & unhealthy.

314. Different Parts more or leſs readily take on different Inflammations; external Parts are more inclined to the suppurative, internal Parts take it leſs readily, suffering even the

Presence of foreign Stimuli a long Time, without going into this Stage. Vital Parts do not readily admit of the suppurative Inflammation, though they willingly take on the first & most simple Inflammation.

315. When a Part is inflamed that is not essential to Life, the Constitution does not necessarily sympathize with it, unless from the long Continuance & Violence of the Inflammation; for here the Operation of Inflammation may be carried on, without interrupting the Functions of the vital Parts.

316. But if the Constitution of the Patient be very irritable, & readily take on Sympathy, nearly the same Phenomena will arise as in Inflammation of the vital Parts; the Pulse will grow small, quick & hard, Blood drawn off will be sizy but loose & its superficies flat; the Violence of Pain will however be greater than in the Inflammation of the vital Parts.

Q. There are two Powers which can produce a Change in the State of the Pulse, that of the Heart, & that of the Arteries; the Regularity or Irregularity will depend upon the Heart, the Hardness, Fullness, Softness & Smallness will depend upon the Arteries.

317. All Parts supplied with Brain Nerves from the Intercostals & Par vagum, when attended

with Inflammation give Symptoms of Lowness and Depression.

9. The Effects of Inflammation on different Parts.

Stomach — Quick, small, hard & sometimes low Pulse, Nausea, dull, heavy Pain, Depression of Mind.

Small Intestines — nearly similar.

Large Intestines — Pain more acute, general Depression - less Nausea.

Liver - This produces besides it's own, peculiar Symptoms, Effects somewhat similar to Inflammation of the Stomach.

Heart - Its Motions are confused & irregular, the Pulse quicker & lower than common.

Uterus - Great Oppression, Nausea - obtuse Pain.

Lungs - The Heart frequently sympathizes, preventing a full Diastole; when the Muscles are inflamed the Pain is acute, the Pulse full & strong: Inflammation of the Bones & Tendons produces a dull heavy Pain, and the Stomach generally sympathizes.

318. The Termination of Inflammation may take Place the quicker, the nearer it is to the Heart.

319. The Pulse growing quick after the Commencement of Inflammation, is a Proof of the Constitution becoming affected or sympathizing.

320. On the Commencement of Inflammation, Rigor is frequently felt, this is not simply from the Debility induced in the Constitution, but also from

the Novelty of the Action which it performs, but weakly, because it is not prepared for nor accustomed to it.

321. In Rigors & Syncope the Blood is collected about the internal Parts, & the external are left in some Measure empty.

322. Every new Action in the Constitution must tend to induce Weakness in it, its Effects will, however, vary in different Constitutions; in the strong it will excite the general Powers of Action, & a hot fit will soon succeed, in the weak the hot Fit will not always be produced, but only a clammy Sweat succeed.

323. Rigors are not attendant on the Commencement of Inflammation alone; every new Action in the Constitution may be accompanied by them.

324. Life cannot go always in the same State, it must have its stated Seasons of Rest & Action; hence even in the most combined Diseases & when the Cause is unvaried, there will be Intervals of Alleviation & Exacerbation; Nature observing her general Laws, rests even in Disease.

325. Exacerbations may be considered as the Renewals of the Commencement of diseased Action, & so akin in some Measure to Rigors.

326. Disease may exist, & yet the Constitution be insensible to its Action, it may want Power of keeping the Constitution in Action beyond a certain Time; in Ague the Disease exists as much

between as during the Paroxysms.

327. From [illegible] it is evident that a Change arising in the Constitution, a Change in the Blood, as partaking of & possessing the Living Principle, may take Place also.

328. The Appearance of the Blood, will not be always the same under same Symptoms (Circumstances) of constitutional Affections such as the State of the Pulse &c.

329. Inflammation begins at a Point at first; all the local Symptoms being confined within a small Compass; afterwards it spreads according to the State of the surrounding Parts, which may be either local or constitutional; as the surrounding Parts are more or less in Health they will be more or less disposed to continued Sympathy; at length the Inflammation & Redness will be lost gradually in the surrounding Parts.

330. Inflammation is attended with a Swelling of the Part; the more healthy, the more the Swelling will be increased at a Point.

331. The Swelling of a Part arises from the [illegible] of the Part being more distended with Fluid than natural, from the Extravasation of coagulable Lymph, & of some Serum, which is known from the Oedema of the surrounding Parts; the less extensive the Oedema is, & the firmer the Margin of the Inflammation is, the more of the healthy Inflammati

on will be present, for here more coagulable Lymph than Serum is thrown out.

332 The Color of the inflamed Part, 329, will also be altered; the nearer it approaches to a pale scarlet Redness, the more healthy the Inflammation will be; the less healthy the Inflammation is, the Color will be less of the scarlet & more so of the common Red inclining to purple, & sometimes to a bluish Hue.

333. The Changes of Color, 332, will arise

a From Vessels which naturally contained only Lymph or Serum, carrying red Blood.

b. From their containing more Blood than circulated through the Part in its natural State, according to the Law of the animal Oeconomy, that the more a Part has to do, the more Blood will be given to it; the Color is that of arterial Blood.

c From new Vessels being formed in that Part by coagulable Lymph becoming organized.

334. When Inflammation attacks Parts near the Surface of the Body, the Heat of the Part will be considerably increased.

335. But the Heat of the inflamed Part will not be increased beyond the Standard Heat of the Animal, though compared with the ~~other~~ Heat of other Parts of the surface, it will be greatly increased.

336. An Increase of a Heat in a Part does not always

arise from an Increase of its Power of Action, it may arise from increased Action though attended with Weakness.

337. Coldness in a Part is, however, generally arising from Weakness & Want of Power of Action; but a Part may have its Degree of Heat lessened by its sympathizing with the affections of other Parts, as the Stomach, Changes in the Mind &c.

Q. Mr. Hunter threw Tart. Emet. gr. ix into the Vein of a Bitch, it soon vomited her, she became convulsed & died, she was astonishingly cold during vomiting; & upon opening her immediately after Death the Heart & Lungs were found remarkably cold.

338. The Source of Heat is probably in the Stomach, from whence by Means of the Circulation it may be conveyed to every Part of the Body.

Q. The Stomach sympathizing with any Part of the Constitution, is probably the Cause of Rigor; Rigors are not only produced by constitutional Affections but even by local ones, as the pricking of a Finger; also by Affections of the Mind, as Fear, horrid Sights &c. The Absorption of any contagious or putrid Matter into the System is attended with Rigor. Rigors probably do the same Thing in the Constitution as vomiting, rousing the Constitution to greater Action; the Heat of the Blood cannot be altered by the sympathetic Fever, a constitutional Affection can only produce a Change in it.

339. Inflammation is commonly attended with a

painful Sensation, communicated from the afflicted Part to the Mind; in the adhesive State it is rather of a dull heavy Kind. when proceeding to Suppuration, it becomes more acute, when Suppuration has taken Place it abates, when Ulceration begins, it again increases, but in the latter State it rather gives the Idea of Soreness.

340. Every Time the Arteries dilate, there is an Increase of Pain; hence the Cause of throbbing; the Cause of the Pain is the Distinction of nervous and sensitive Parts.

341. The Disposition of Inflammation will sometimes cease, even before Adhesions are formed, and this after a Part has begun to swell, this is called Resolution.

342. As the Increase of the Pain was a Proof of the Progress of Inflammation; so its Diminution is to be attributed to the Cessation of the inflammatory State, when the uneasy State is removed, the disturbing Cause is taken away, and the Parts return to their ordinary State & Actions.

343. The Constitution will not only be differently affected by the different Situations & Functions of Parts inflamed, & greater or lesser Extent of the Inflammation, but it will also be differently affected by the different Stages of the Inflammation present; thus the suppurative Inflammation will affect it much more than the adhesive or ulcerative, by whose Action in general, the Constitution is but little disturbed.

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344. The vital Parts subject to Inflammation may be divided into

a. Those, which readily take on Sympathy, and

b. Those, which do not.

Of the latter the Lungs, of the former the Stomach are Instances.

The Pulse will, in general, be harder though smaller under the Affection of the former than the Latter.

345 Whatever can obstruct the natural Circulation through the minute Vessels, will produce Inflammation, its Causes, therefore, may be very different & various.

346. When a Part perceives an Alteration in its Structure, or a Change in or Obstruction to its natural Functions, the Stimulus of Imperfection arises.

347. The Stimulus of Imperfection excites in Parts new Dispositions, whose consequent Actions are either Processes of Restoration or Destruction, according to the Strength of the Parts and their Facility in the Art of healing (252).

348. Irritation of whatever Kind being applied may produce Inflammation peculiar to the Constitution or Condition of Parts. (311. 314).

Thus if Small Pox Matter be applied, if the constitution have a peculiar Susceptibility of a putrid Disposition, the Disease will partake the constitutional Disposition, as in the conflu becomes vascular & nervous, & thus readily re-unites the Sides of the Wound; this Process is accomplished with more Ease in the first Class of Injuries than in the second, because the Blood by coming in Contact with atmospheric Air, the sooner loses its living Principle.

If when Wounds are inflicted, it is evident from the Text, that where the first Mode of Union is to be effected, the Surgeon should bring the Lips of it in close contact, and retain the Blood in the Wound then defend the Part from the Action of the Air; no foreign Matter should be introduced, hence the Suture must in general be objected to.

Union will not only take Place between divided Parts of the same Body, but also between Parts of different Bodies still retaining their living Principle when brought in Contact with each other. Thus Mr. Hunter introduced the Testicle of a living Cock into the Abdomen of a Hen, the Testicle became united to the Liver of the latter, & sometime after when the Hen was killed Mr. Hunter injected the Testicle from the Body of the Animal.

Again he fixed a Tooth recently extracted on the comb of a Cock, & on injecting the Animal, the Membrane lining the Tooth was also injected.

Upon this Mode of Union depends the Cure of the Hare Lip; from this arises the natural Cohesion of Fingers one to the other, when the Cuticle has been destroyed by Burns &c, from and Small Pox. So venereal Matter shall in one Person produce a Chancre surrounded with common Inflammation, in a Person of a different Constitution it will be accompanied with an erysipelatous Inflammation, which may spread to a wide extent.

349. The Disposition for Restoration of Parts injured is the most simple, 105 that from Necessity is the most complicated of any.

350. The Stimulus of Imperfection may arise in Parts from different Causes, as Obstruction to their natural Actions, or from an Alteration in their Structure by external Violence; the latter becomes chiefly the Object of Surgery, though the former may also fall within its Province.

351. The Effects of external Violence will be different according as that Violence is applied to sound Parts or to Parts diseased.

352. Mechanical Injuries on sound Parts may be divided into two Heads.

1st Those which do not communicate externally.

2d Those which do.

To the first may be referred Bruises, Strains, simple Fractures &c.

To the second, Wounds of all Kinds, opening externally.

353. The first Division may by Circumstances be changed into the second, & the second may be brought back to the first.

354. The Effects of the first Division on the Constitution, will be different according to the State of

the Constitution, and the Nature of the Parts injured; if the Power of healing in a Part be strong, the Part injured not vital, & the Constitution not highly disposed to Sympathy, no material Change will take Place in the Constitution, & the Process of Restoration will go on with~~out~~ only local Effects.

355. The second Division is much more complex and its Varieties will be numerous, depending upon the Nature & Situation of the Parts injured, the Kind of Violence inflicted & the Degree of that Violence.

356. Its Effects on the Constitution will be determined by the same Laws as those regulating the Effects of the first Class.

357. When vascular Parts naturally in Contact with each other, are separated by Violence, an Effusion of their contained Blood follows the Injury.

358. The Union of Parts violently ~~injured~~ separated from each other is accompanied either by

a The extravasated Blood being the Bond of Union.
b The adhesive Inflammation. — or
c Granulation.

259. It has been already observed that the Blood is a living Fluid; when extravasated it does not immediately lose its living Principle. In the Separation of Parts by Violence when the Blood is effused, the first Mode of Reunion is effected by the red Particles & Serum being absorbed; and the coagulable Lymph being left, the Lymph

this arises the Union of the Skin to the Breast, when Ulceration has preceded &c.

360. But a Variety of Circumstances may prevent this Mode of Union taking Place; the second Process or that by adhesive Inflammation is next excited. Coagulable Lymph being still the necessary Medium of Reunion is supplied from the Vessels of the Sides of the Wound, by the first or adhesive Inflammation arising; this becomes organized & again fills up the Breach.

361. But many Circumstances impede this Process also, such as the Death of the solid Parts receiving the Injury, hence their becoming foreign Bodies; the too great Violence of the Inflammation, 300/ producing Suppuration, the Interposition of foreign Bodies &c, & here the Process of Restoration cannot be accomplished without the third Mode/ /Granulation.

362. When an internal Cavity is exposed, the whole of the Cavity would run into Inflammation unless some Part of its Surface be in Contact with some other living Part; that simple Contact will set Bounds to the spreading of the Inflammation.

Q. Hence when a Cavity is exposed & does not unite by the first or second Mode of Union, the whole Cavity still will often escape running into the suppurative Process, the Contact of the Edges, or the Part near the Edges of the Wound with some of the containing Parts setting Bounds to the Process of the new Action.

(The Parts taking on Sympathy, may, however, produce an Exception to the Rule in the Text.)

363. The adhesive Inflammation is sometimes present not answering the final Intention, & this is when the Violence giving Rise to it has excited too rapid an Action to admit of the adhesive Process taking its full Effect; this however seems rather to belong to the erysipelatous Inflammation.

(This is illustrated by Dissections of Women dying with the puerperal Fever, when Inflammation had produced some Adhesion between the Peritoneum & some of the contained Viscera, while the Suppuration had generally diffused itself over the Parts of the abdominal Cavity.

364. The Cure of Inflammation is by Resolution; but before we attempt the Cure of Inflammation artificially, we must enquire into the Constitution of the Patient, as whether he is disposed to Irritability or Indolence, his former Habit, Temper of Mind &c and also the Situation & other Circumstances of the affected Part.)

365. The Time for attempting the Cure of Inflammation by Resolution, is before the suppurative Process has taken Place.

366. We must consider whether the Inflammation be of the true healthy Kind, or whether it

has the venereal Cancerous Disposition or any other specific Disease mixed with it. We must also consider whether there be any Increase of Life, or only an increased Disposition to make Use of Life, a Distinction very necessary to observe.

367. We have noticed (332) that a Change of Colour in Parts is produced by Inflammation; when the Inflammation is seated in Parts near the Skin, & its Action is violent, Vesications will arise, the Cuticle being separated from the Cutis; these arise from the Action producing Death of the connecting Medium between the Cuticle & Cutis.

368. The coagulable Lymph (319) fulfils not only the Intentions (293. 359. 360.) but also when the third Mode of Union, or as it takes Place, becomes the Basis of the future Granulation.

369. In the Cure, if the Inflammation be of the true healthy Kind, we have only to remove whatever Causes keep it up.

370. An increased Disposition to make Use of Life (360) or too great Violence of Circulation is to be lessened by weakening with Evacuations, and the exciting of Nausea, & by soothing or anodyne Remedies.

371. When there is both an Increase of Life and Powers, & an Increase of Action, weakening the System becomes necessary.

372. The System is weakened by bleeding; if only increased Action is present, without increased Powers, bleeding is only to be had Recourse to from

particular Indications. viz.

a. When it is desired to lessen the present Action in order to give the Disposition Time to wear out itself without destroying Parts by its violent Action.

b. When the Part affected is a vital one.

c When it is near a vital one.

373. Unless the Powers of Action are great or the Exigency of present Circumstances requires that Blood should be drawn from the System, topical Blood letting is to be prefer'd, & that from & as near to the inflamed Part as possible.

Q. Topical Bleedings, however desireable, cannot always be had Recourse to, for Instance in increased Action of the Vessels of any of the internal Organs.

374. When the Action only, not the Powers are increased, it is to be desired that the Constitution should perceive the Loss of Blood as little as possible. Topical Bleedings give less alarm to the Constitution than Bleeding from the System.

375. Topical Bleeding should be particularly insisted on when there is a Disposition in the Habit to form but little Blood, & the Part inflamed is distant from the Source of Circulation.

376. In our Choice of bleeding we are in a great Measure to be regulated by the Pulse, but as the Pulse is differently affected by the Inflammation of other Parts, we cannot be absolutely determined for or against bleeding by any one general State of

the Pulse; for the most Part, however, it is to be considered that a quick & hard Pulse generally indicates bleeding.

377. Another general Indication of Bloodletting is the State of the Blood but this can only be an after Proof.

378. If the State of the Blood be sizy, & the Coagulum flat & its Texture loose, bleeding is contraindicated, or at least to be sparingly employed.

379. Another general Indication of bleeding is Urine, high in Color & small in Quantity.

380. A comprehensive View of all the Symptoms of Health and Weakness, present Violence of Action, the Nature & the Situation of the Parts affected, can only enable us to decide on the Rectitude of using or omitting bleeding.

381. Purging weakens universally; it is to be had Recourse to with the same Caution as bleeding; and in irritable Habits still greater Caution is necessary.

¶. In weakened Habits a single Stool frequently produces fainting, nay it has even caused an Abolition of the Powers of Life.

382. Sudorifics may be proper, when the Constitution sympathises much because they do not so considerably diminish Strength.

383. Nauseating Medicines lessen universally the Powers of Life; vomiting ones rouse the Powers, for vomiting seems an Action intended to relieve Weakness.

384. Soothing Remedies. Opium is the principal.

Opium will only leſsen Actions not alter them. As the Disease sometimes consists almost entirely in increased Irritability, by leſsening the latter it may diminish the Disease.

385. We also endeavor to promote the Intention (374) by topical Applications; of these Preparations of Lead appear to leſsen the Power, as well as leſsen Action; they are not, therefore, universally to be had Recourse to. (366).

386. Cold powerfully weakens Action, from its Use therefore, great Effects may be effected; the Degree & Length of Applications of Cold is, however, to be considered. (262).

387. The Effects of topical Remedies will be either

a - Immediate.
b By Repulsion.
c By Revulsion & Derivation.
d By Sympathy.

388. The first Order (a) seems to require no Explanation. Applications acting by Repulsion only produce their Effect upon a Part, when the Inflammation has arisen from a Parts taking on the Disease of the Constitution, & the Disease from a constitutional one has become a local one, as the Gout.

389. Revulsion and Derivation are not well defined, the Distinction between them is perhaps ideal; by them we must understand a Ceſsation of Action in one Part produced by an Increase of Action in another Part; this does not depend upon

the Humours, but upon a Change in the Place of Action, or Irritation.

¶. Upon this Principle we use Blisters to remove deep seated Pains; upon the same we apply Sinapisms to the Feet when the Brain is affected, Vomits when the Testicle is inflamed.

390. Repulsion is the Cure of the Part, be the Consequences of the Cure what they may.

391. Sympathy. The Cure of a Part by local Sympathy is when the same Effects arise in the Part diseased from an Application used to some other Part, as if the Application was made to the diseased Part itself.

¶. Hence it is that mercurial Ointment applied to the Skin covering a Node, will cause the Node to disappear, in the same Manner as though the Mercury had been applied to the Node itself, without the Medium of the Integuments.

392. A Cure of local Inflammation by Derivation or Sympathy will often take Place, when sedative Applications have proved ineffectual.

¶. Vomits curing Inflammation of the Testicle, after sedatives &c had been used in vain; Caustics behind the Ears curing Opthalmia which had resisted all Applications to the Eyes, elucidate the Truth of the Text.

The Cure of the Tooth ach by burning the Ear, is to be referred either to Derivation or Sympathy.

Derivation seems to be the Reverse of Sympathy we cannot, however, always distinguish one Effect from the ~~an~~other. The Cure shall often be effected by

Sympathy; thus blistering one Part will remove a Pain existing in another Part, though the Action excited by the Blister may be of a different Kind.

393. Topical Applications may be divided into
a – Fomentations.
b Steams.
c Lotions.
d Poultices.

394. The Order a and b are of shorter Duration in their Actions, but may afford Relief during the Application; the Order c are more lasting in their Actions & are only Substitutes for the Order d, which of all Applications produce the most permanent Effects.

395. Poultices will be either
a Simply warm and moist.
or
b – Medicated.

396. The Effects of a Poultice will be immediate on the Parts to which it is applied, but by Sympathy they will be extended further.

397. Medicated Poultices will be formed according to Circumstances, with Lead, Opium, Mercury &c

398. When Inflammation however excited, exceeds the adhesive State, & gets beyond the Point of Resolution, Suppuration is produced.

9. Among the Causes of this Effect are Wounds not uniting by either of the first Modes of Union, & ~~to~~ the third or Granulation becoming necessary for their Cure; Violence having produced the Death

a Part, to the Removal of which Suppuration becomes necessary, or Violence having opposed internal Surfaces.

399. The Cause of a Parts running into Suppuration is its receiving the Stimulus of Imperfection, & being thence necessitated to begin a new & unusual Process.

400. Communication with the Atmospheric Air, is not necessary to Suppuration.

4. The Application of Air to internal Surfaces, as the Cavities of the Thorax, Abdomen & Joints has been considered as the Cause of Suppuration but this is evidently not the case, for Suppuration would take Place even in the vacuo. In Emphysema where Air is diffused all over the Body we have no such Effects untill an Opening is made; but in Case of Suppuration from an Opening, the Stimulus of Imperfection takes Place, the Cavity being an imperfect one; to prevent this Imperfection as much as possible, we observe in the Wound of the Abdomen of a Fowl, that Adhesion takes Place between some of the Intestines & the Edges of the Wound; if this does not happen, general Suppuration succeeds; another Proof that Air in internal Cavities is not the Cause of Suppuration is that in some Animals the Air has a free Communication from their Lungs into the Cells of their Bones, and into the abdominal Cavity, without producing Suppuration, as is the Case in many Birds.

[illegible] great Violence of Action is not neceſsary to Suppuration, it is rather productive of Gangrene: Suppuration is sometimes produced in a Part without any visible Violence of Action in the Part which takes it on.

402. Although it sometimes arises without any visible Violence of Action in a Part, yet in healthy Constitutions it is generally found that the Inflammation is considerable.

403. The Action producing it is most violent, when it arises spontaneously.

404. Suppuration takes Place more readily in internal Canals, than in internal Cavities. ¶ This we readily account for, knowing that Suppuration is the first ordinary Proceſs in inflamed Canals, whereas adhesive Inflammation is the prior Action in the Cavities.

405. It is not neceſsary to forward Suppuration even in Inflammation arising from the Constitution; the constitutional Disposition seeming to have produced the full Action in the Inflammation, or Inflammation is to be considered as the Disease taken on by the Part from the Constitution & so curing the latter, & Suppuration is only the Sequel of the Disease.

406. The adhesive Inflammation going on to the suppurative, in the latter Stage the general Symptoms increase, the Pain becomes more acute, the Sensation arising from it is as much as poſsible

that of simple Pain; the Redness is more intense, new Vessels being formed & old ones being more dilated; hence a more violent throbbing from an increased Dilatation of the Arteries; the Swelling of the Parts increases from a still greater Effusion of coagulable Lymph & Serum; the surrounding Parts become œdematous.

407. One, two or more Parts lose the Power of Resolution & take on a similar State to Cavities exposed. A cavity is formed in which Pus is secreted at first mixed with coagulable Lymph.

408. A Return of Adhesive Inflammation checks the Progress of Suppuration.

409. When the Progress of Suppuration is not stopped, the Matter will be carried onwards to the Skin, the Parts between the Cavity & the Surface of the Body are gradually absorbed, the Cavity becomes daily enlarged, the Skin becomes thinner & thinner, at length Ulceration from the Pressure takes place, and the Abscess bursting, a natural Exit is given to the contained Matter.

410. When the suppurative Inflammation is going on, Rigors frequently occur, a common Attendant on new Action in the Constitution.

411. When the Progress of Suppuration cannot be stopped, the Matter is to be carried on towards the Skin, hence the Utility of stimulating Plasters &c, Poultices can do little untill the Inflamma-

tis has invaded the Skin, they then keep the Surface moist & soft.

412 Suppuration sometimes goes on without previous Inflammation; here Parts suddenly fall into it, without allowing the previous Action of the Adhesive Inflammation, as in the erysipelatous Suppuration, or it goes on slowly & without Pain, as in some scrophulous Cases.

413. When a healthy Abscess is opened the Parts readily take on a Disposition to heal, but in the Collection of Matter 412. when the Abscess is opened & the Cavity becomes exposed, a general Inflammation takes Place & a perfect Suppuration is formed; but the Constitution is generally much affected by this Process, for here the Inflammation is to arise in a Part already in the Habit of Disease.

414. The Matter contained in the Abscess formed without Inflammation, will be different from that in the common inflammatory Abscess; in the former it will be a Curd like Substance, mixed with a thin purulent Fluid.

415. The Fluid produced by the healthy Suppuration is called Pus, which is quickly and readily formed on the Surface of Canals.

Q. Observations on Pus from 415. to 423.

Pus cannot be formed from the melting down or Waste of the Solids, otherwise how could the human Penis furnish, in the virulent

Gonorrhœa, Pus many Times exceeding in Quantity the Substance of that Organ; some have denied the Discharge from the Urethra & certain other Canals to be purulent, & affirmed that it was only Mucus; but it has every Characteristic of Pus. No Injury arises from the Absorption of Pus into the ~~Corre~~ Circulation, otherwise how must those fare who have large Sores, as Patients undergoing Amputation, whose Health is often uninterrupted through the whole of their Cure.

Pus may become offensive by being mixed with other Fluids as putrified Blood &c, hence its Foetor, when its Discharge attends a diseased Bone.

Pus is a bland, unirritating Fluid, we see it make its Way in Psoas & Hip Cases from the Loins & Hips low down into the Thigh, without producing the least Sense of Pain, unless merely from its Weight & Distension of Parts amongst which it is seated.

Pus cannot change animal Solids into its own Nature by any fermenting Process. Chemistry cannot imitate the Process of Nature in forming Pus in the animal Body, any more than any of the other Secretions; nor can Chemistry decide on the Nature of Pus; the Conclusions drawn from the Precipitations of it by vitriolic Acid &c are irrational & unsatisfactory; the Precipitate from any other animal Substance, so dissolved, will give equally the same Appearances.

416. To the Formation a particular Organization of Parts seems necessary, though we do not exactly know in what the Nature of that Organization consists, any more than we do that which is necessary for the different Secretions.

417. Pus is to be considered as a Secretion, and the Parts secreting it to be glandular; it does not arise from a Destruction or Dissolution of the Solids by Fermentation &c, the solid Parts may die, slough and be found in it, nor is it a mere straining of Matter from the Blood.

418 Pus is a Fluid which in its perfect State has certain peculiar Qualities, as Color & Consistence, it is somewhat sweet & mawkish to the Taste. It consists of a Number of large whitish Globules, swimming in a Fluid resembling Serum of which Globules it will have a greater or lesser proportion according to the Health of the Body that produced it; like Serum the Fluid is coagulable by Heat.

419. It is perfectly mild & inoffensive in its natural State, incapable of irritating the most sensible Sore.

420. Pus when absorbed into the Habit & mixed with the Blood is productive of no ill Effects, unless it be the Vehicle of specific Poison.

421. Pus is less disposed to putrify than other animal Fluids; when in certain Situations & in Contact with Air it readily takes on Putre=

trition & becomes offensive, but this is probably from other Substances as Blood &c mixed with it.

422. When an Abscess is first opened, Portions of coagulable Lymph mixed with Pus are commonly found; these are Parts of that Lymph which had been employed in making the Cyst to contain the Matter, becoming loosened from the internal Surface of the Abscess, & being blended with Pus.

423. Chemical Experiments cannot explain the Nature or Manner of the Formation of Pus. See last Note

424. The Formation of Pus is to be considered, though a new, yet as a Process of Health; Parts taking on a diseased Action, the Secretion of Pus is interrupted, & it is no longer generated pure & possessed of its peculiar Properties.

425. Pus, like all other Fluids, thrown off from solid Parts, always partakes of the Nature & Properties of the Parts from which it was secreted, & accordingly will have occasionally, the specific Properties of the Lues, the Cancer, the Small Pox &c.

426. The final Use of Pus, or Intention of Nature in producing it is not known.

Q. Pus may be of Use to Sores to keep them moist &c, but this does not explain why it is formed in internal Cavities; it may also be of Use as a Vehicle in the Removal of extraneous Substances, this however, can only be a secondary Intention, with its final Use we are still unacquainted.

427. Ulcerative Inflammation is that Action into which a Part falls from a Disposition to absorb itself, even to the Solution of Continuity.

428. The Cause of this ulcerative Absorption will be an Inability of Parts to support themselves under present Circumstances; these Circumstances will be,

a - Irritation.

b Weakness.

429. These Circumstances give Rise to

a - A Consciousness in the Parts of the Necessity to be absorbed.

b - A Consciousness in the Absorbents of the Necessity of commencing the absorbing Process.

430. Irritation will begin by

a - Pressure 246.

b - Contact with dead or foreign Matter.

431. Weakness or a Want of Power in Parts to carry on their natural Functions, may be a Cause of the ulcerative Absorption.

432. Pressure considered as irritating is of two Kinds,

a - Pressure from the Surface inwards,

b Pressure from within outwards.

433. Parts strongly resist the Action of the Pressure a, but readily yield to the Action of the Pressure b 432.

434. From the above, then, we infer that when the Irritation of Pressure a 433' is applied to produce ulcerative Absorption, it must be very violent in Proportion to the Strength of the Parts; for it is not sufficient to destroy the Power of Resistance in the Parts pressed, it only produces a thickening of them.

435. Nature resisting the Entrance of foreign Matters into the Body, thickens & thus, as it were, strengthens the Parts to give them a greater Power of Resistance to the Admission of what would prove injurious to them.

436. In Pressure from within outwards, v. 433' the internal Parts as cellular Membrane &c fall more readily into the ulcerative Absorption from the Skin; In Irritation from external Pressure and from Contact with foreign Matter, the Skin falls more readily into it than the other Substances.

4. When a Collection of Pus makes its way to the Skin, we find the cellular Substance, adipose Membrane & a Muscles ulcerated to a considerable Extent while the Skin ulcerates only so as to form a Hole for the Exit of the Matter.

437. When the Pressure is from within outward, all the Sides are equally in Contact & compressed by the Body making the Pressure, yet that likewise accept of Ulceration which is nearest the Surface of the Body.

9. If Inflammation attack the internal Coat Part of an Intestine Adhesions are produced between it & the Peritoneum, & if the Inflammation still goes on an Abscess is formed in the middle of the Adhesion, after which the Matter contained makes its way outwards from Ulceration taking Place on the side next the Skin, between which & the Matter even in the most corpulent Persons, the Muscles, fatty Membrane, & cellular Substance will be injected by the Pressure of that Matter & that Matter eliminated before, so to their anterior Substance, as the Intestine will fall into Ulceration. Le Dran gives several Cases of this kind, but does not explain them.

430. When Bodies making Pressure, from within outwards are to be carried to the surface in the natural Process, the adhesive Inflammation of the neighbouring parts precedes the Ulceration of the Skin; for Nature finding Exposure must take Place by the former Process, provides against that Inconvenience and renders its Extent as small as possible.

430. When Absorption is to take Place of the Parts between a Surface lodged within and the external Surface, in Order to the Removal of that Substance there is always a Mixture of the ulcerative and interstitial Absorption.

4. When living Tumours are brought to the Skin, in their Progress the interstitial Absorption only goes on, untill there arises a Necessity for the Ulceration in the Skin; many other Substances are

also brought to the Skin, without producing the ulcerative Absorption.

440. Ulcerative Absorption goes on either with or without Suppuration.

q. Suppuration very commonly & in some Parts always attends on the ulcerative Absorption; of this we have abundant Instances in the Muscles, cellular Substance & Skin; we have also Instances of its proceeding without producing Pus, in Bones, when sustaining the Pressure of Aneurisms &c, in the Absorption of the alveolar Processes after removing a Tooth, & in the Removal of Callus after Fractures. In Lord Anson's Voyage, we find that several of his Crew, who had been severely afflicted with the Scurvy, which occasioned the spontaneous Dissolution of the Cicatrices & even of the Callus formed after Fractures.

441. Bones as well as soft Parts become open to the ulcerative Absorption from Pressure & Irritation but the Cuticle is incapable of Irritation & the ulcerative Absorption.

442. An Exception to /437/ will arise when the Irritation from Pressure is violent, & the adhesive Inflammation has not truly taken Place in the Parts behind within, or on one Side of the irritating Substance.

q. Hence it is that Matter sometimes bursts into the Air Cells of the Lungs, when a suppuratory Inflammation of the Pleura & Lungs has happened, instead of making its Way through the intercostal Muscles to the Skin: for the same Reason, sometimes in Abscesses of the Liver, Pus makes its Way internally, bursting into the intestinal Tube, or the abdominal Cavity.

443. The Difficulty with which the Cuticle (441) is removed for the Expulsion of Matter, is the Cause of Pain in Suppurations, where the Cuticle is very thick, as in the Whitlow, Abscess in the Sole of the Foot &c

444. The ulcerative Absorption but little affects the Constitution, although the Constitution has powerful Effects on the ulcerative Absorption.

9. A change in the Constitution will often occasion a Sore to spread, more in one Nights Time, than we can procure in a Fortnight.

445. As Ulceration consists in the Division of Parts naturally united, or in a particular Mode of Solution of Continuity, so its Cure is effected by a Reunion of them, either by Adhesion (358) or by Granulation, the third Mode of Union (359). When the first & second Modes of Union will not take Place in Parts violently separated, the third Mode is pursued in the Process of Restoration, this is by Means of Granulation.

446. Granulations are formed by coagulable Lymph effused from the Surface of the Ulcer, becoming vascular. Vessels from the original Parts pass to the Basis, & also to the Surface of the Granulations, & would almost seem to terminate there.

447. Granulations are always of the same Nature.

as the Parts they arise from.

448. Granulations will be healthy or unhealthy. the more convex they are seen, & the smaller their Points, & the more florid red Colour they are of, the more healthy: the flatter their Surface, the paler, or the more they approach to a livid Hue, the less will they be found healthy, & they more slowly will they admit of the Parts being healed.

Q. By attending to the Appearance of a Sore, we may judge whether it is healing or disposed to ulcerate; further, if the latter, the Edge will be irregular, inverted or hanging over the ulcerated Surface, the Discharges in general thin, the Surface in the whole or in many Parts concave; whereas when there is a Disposition to healing they are convex, the Margin purple, covered with a whitish transparent Membrane.

449. By the Appearances of Granulation we may judge in some Measure of the State of the Constitution.

Q. In the irritable Constitutions mostly, the Granulations will be loose & flabby.

450. When Granulations are healthy they have a strong Disposition to unite with one another.

Q. Mr. Hunter saw two Granulations, one from the Scalp & the other from the dura Mater, arising after trepanning, united so firmly that they could not be separated without an Hemorrhage.

451. Granulations are, in general, the Conve-

quences of Suppuration but Granulation may sometimes take Place without Suppuration preceding. Q. A Man aged 50 broke his Thigh Bone, & the Attempt at Reunion both by the first & second Intention failed, for the Fracture, which was simple, did not unite after being bound up for a considerable Time, at length the Man died. Upon Examination it was found that Granulations between the Ends of the fractured Bones, though without Suppuration, had taken Place. Scratches & slight Wounds in the Skin, though they unite by the first Intention, do not always require Suppuration, they heal frequently under a Scab.

452. To perfect the Cure of an Ulcer it is necessary that the Granulations receive a Covering, or that the Process of Cicatrization takes Place.

453. Cicatrization is performed partly by the Elongation of the original Skin & partly by the Formation of a new Skin.

454. The original Skin is necessitated to elongate or stretch itself by the Contraction of the Granulations.

455. Cicatrization is always in View, when Granulations are formed: when the Granulations have been ~~so far as Circumstances will admit~~ carried to a certain Degree, the Contraction of the Granulation begins at many Points; as the contracting Process goes on the Skin on all Sides is drawn nearer to the Centre of the Sore.

456. When the Contraction of the Granulations

has been carried so far as Circumstances will admit of, & the consequent Elongation of the Skin has been carried to its greatest Point; from the Margin of its original Skin, the new Skin shoots.

Q. The Contraction of Granulations, perhaps, goes on in some Degree untill the Cure is compleated, but after a certain Time, ~~but after a certain Time~~ they do not contract sufficiently to oblige the Skin to stretch itself, & hence there must be a Necessity for the Formation of new Teguments.

When the original is unfit or cannot give the Disposition for the new one to form, then there is sometimes a Disposition in the Centre of the Sore to produce it, hence it is why we sometimes see Sores begin to cicatrize in the middle.

457. The Contractions of the Granulations, or their Effect in elongating the original Skin, is impeded by its being situated on hard Parts, as Bone; & where the Sore is circular instead of having considerable Length in Proportion to its Breadth.

Q. We see that if the Wound or Ulcer takes Place on soft Parts, as the Buttocks &c. & when the Skin is loose, the Quantity of new Skin formed in the healing is very little, but in Ulcers on hard Parts, as on the Head, the Skin is enabled to stretch but little, hence in Wounds of the Scalp, the new formed Skin is nearly of equal Extent to that of the lost Substance.

458. The Formation of new Skin is a Process Nature forms with Difficulty, & with more Difficulty in the lower Extremities than in the upper Parts of the Body.

Q. Hence it is evident that Surgeons cannot be too cautious in saving Skin, when it becomes necessary to remove Parts, as in Amputations of the Leg &c, & especially where the Wound is to be inflicted in Bone, the natural Covering of which is little besides the Skin, as in the Tibia &c.

459. The new Skin is a very different Substance to the old; whether it consists of the Granulations altered in their Structure, or is a new and distinct Substance from them is not to be ascertained. It is less moveable than the original Skin, appears to be upon the Stretch, as if a small Piece of Skin was stretched & sewn in a larger Hole, so that the Sides of the old Skin seem puckered; it is, however, gradually subjected to mechanical Motion & becomes more loose and pliable. The young Cutis when formed first, is very full of Vessels, but these are either afterwards taken away or changed into Absorbents, untill at length the Part becomes quite white.

Q. From Part of this Aphorism it must be evident how much Utility Motion & Friction must be to a Part stiffened from having undergone Granulation & Cicatrization: Mercurial Unction & Electricity both conduce to this End & seem to be very properly indicated.

460. Whenever a new Cutis is formed, a Cuticle is formed also; the Cutis forming it the more readily than the Granulations form the Cutis. Every Point of Cutis is forming Cuticle.

461. The Rete mucosum is always late in forming Cicatrices between the cuticle & Cutis, sometimes it is never formed at all.

Q. As in the Negroes, who when they are burned or blistered, the Cicatrix formed after healing wants the black Tint.

"But even in Negroes the Rete mucosum is formed, as I have found on examining the Cicatrix of a Negro adult, from which by Maceration, I turned off the Cuticle & found the Rete mucosum perfect"

462 The Cicatrization is sometimes materially affected during the going on of the Processes of Restoration above described, by certain Actions.

463. The most ordinary Actions are.

a - Hectic.

b The Action of Dissolution.

c Spasms.

464. Hectic is a remote constitutional sympathetic Affection, taking Place in a Constitution weakened by a long continued local Disease, which it can neither get rid of, nor cure.

465. It will be caused either by an Affection of vital or of non vital Parts.

466. It is produced earlier by the Affection of vital

than of nonvital Parts.

467. In the nonvital it most frequently arises from Affections of those Parts which have a Backwardness to and a small Power of healing. (275, 276, 277).

468. The more extensive the Seat of diseased Action in Parts of equal Powers of healing the earlier will the Hectic be induced in the Constitution.

Q. 467 & 468. Thus we see Affections of the ligamentous Parts more readily bring on Hectic, than those of the muscular Parts; Disease of the Joints very often produces this constitutional Sympathy, & the larger the Joint the earlier this Effect will take Place. An Affection of the Knee or Elbow brings on Hectic speedier than a Disease of the Wrist or Ancle. Again the Backwardness of Parts to heal depends much on their Situation in the Body. (277).

In the lower Extremities the Power of healing will be less than in the upper; & we see a Disease in the Knee or Hip produce Hectic sooner than a Disease of the Elbow or Shoulder Joint.

Hectic will arise from Affections of Parts whose natural Powers are not weak, as in large Abscesses of the Muscular Parts; but it still depends upon the same Principle, a Disease which the Constitution can neither conquer nor get rid of. (464).

469. Hectic does not arise from the Absorption of purulent Matter into the System.

Q. It will arise in Affections of the vital Parts, & Joints even before Suppuration has taken Place; did it arise from the Absorption of Pus, it should take Place in one large Ulcer as well as another, for it does not appear that there is a greater Disposition for Absorption in one ulcerated Surface than in another; it should arise from venereal Buboes where the Matter is often poisonous.

In large Abscesses the hectic Disposition comes on after opening & when the Matter has been discharged.

If the Constitution can heal up these Abscesses no Hectic arises; large Suppurations have taken Place & the Matter been absorbed again without opening, yet without the Rise of Hectic. We readily conceive why it should take Place sooner in vital than in unvital Parts, because the former gives the Alarm sooner to the Constitution; 2dly. Hectic commonly arises from Lumbar or Psoas Abscesses, scrophulous Joints, white Swellings &c

470. Hectic then depends upon a Part being irritated beyond its Power for Restoration, & beyond the Power of the Constitution to overcome the Disease.

Q. Whatever then will long & obstinately tease the Constitution may become the Cause of Hectic.

471. It is however sometimes doubtful whether the Hectic is not an original Disease of the

Constitution we see it arises when there is a Sore in a Part which has no Impediment to healing, & here in general the Hectic must be cured before the Sore will heal.

472. Hectic is a Kind of slow Diminution of animal Life, even to gradual Dissolution; its Symptoms are in general, slow Fever, with great Debility & Languor, Want of Appetite, Paleness of the Skin, Sweats easily provoked, & indeed arising spontaneously, frequent Sickness & vomitings, or habitual Purging, clear Urine &c.

473. The Administration of internal Medicines can only be useful in Order to the Cure of Hectic, by somewhat strengthening the Constitution & enabling it to support its Struggle longer than it would do unaided.

474. Its Cure can only be effected by the Removal of the local Disease, either by taking away the Part or by inducing in it a Disposition to heal.

475. The Constitutions most disposed to Hectic are the weak & irritable.

476. The Action of Dissolution is different from common Hectic. The Constitution seems to have every Thing in its Power, having gone through & supported the Process of Inflammation & Suppuration, its Powers will suddenly sink & the Destruction of animal Life be readily accomplished.

477. The Symptoms are, an universal Affection of the Stomach, Shiverings, Nausea & frequent Vomitings, small quick Pulse, Hemorrhage from the Surface of the Ulcer, excessive spontaneous Sweatings, soon succeeded by Death.

478. The Habits most disposed to it are the robust & full.

479. For its Cure Nothing seems to be effectual.

480. Muscles lose their Power of Action not only when the Nerves leading to them, or which are their immediate Instruments of Motion, are compressed or destroyed, but also when there is no longer a Necessity for their Propriety in acting, &c. & here they become though naturally voluntary, inobedient to the Will.

481. They also become open to interstitial Absorption & waste in Size & Firmness.

4. If a Limb have its Bone or Bones fractured, the Muscles will no longer act in Obedience to the Will; the same is the Case when a Joint is rendered useless; if the Patella be fractured, the Patient cannot voluntarily act with the Rectus Muscle.

It is extremely curious to observe that voluntary Muscles, when the final Use of their Being no longer exists, become no longer the Instruments of the Will, & that they then waste in Bulk, Strength & Firmness & become soft & flabby.

End of the first Part.

Rationale of Surgery.

Part second.

Illustrations of the Doctrines contained in Part first.

482. In the circumscribed Cavities, when taking on Inflammation, the adhesive it is observed is the first to take Place; if the Progress of the Complaint be not checked or such a Stop to by the Adhesions, the suppurative or ulcerative Stages are the necessary Sequels.

483. In Cavities containing vital Parts, the ulcerative Stage is seldom produced, for before the Complaint proceeds thus far, it generally kills. To produce Adhesions between contained & containing Parts, it is not necessary that the Surfaces of both should be inflamed.

484. According to the Degree and Extent of the Adhesions, the Suppuration in a circumscribed Cavity will be greater or less: if Suppuration comes on in a Cavity where no Adhesions have previously taken Place, the whole Surface of the Cavity will become the Seat of the Suppuration.

485. The Contents of an inflamed Cavity will not always partake of the Inflammation of the containing Parts; for the Lungs or the Intestines may remain uninflamed though a Pleuritis or a Peritonitis may be present.

486. The preceding Doctrines will be illustrated by Observations on the Inflammation of the following Cavities.

1st The thoracic Cavity or Inflammation of the Pleura.

2d Inflammation of the Pericardium.

3d - - - - - of the Peritoneum as containing the abdominal Viscera.

4th - - - - — of the Bladder.

5th - - - - of the Joints & Sacculi mucosi

6th - - - - - of the Eye.

7th - - - - — of Veins.

8th - - - - of the Encephalon.

9th - - — of the Tunica Vaginalis.

also by Injuries & Diseases of Bones, by Wounds in soft Parts, & lastly by common & specific Diseases of the Constitution & Parts.

487. The Pleura is more subject to Inflammation than any other Membrane lining a Cavity in the Body, not from its particular Nature, but from particular Circumstances, as being much exposed to the Action of cold &c.

488. The Pleura becoming inflamed Adhesions are formed between that Membrane & the Lungs, sometimes with but little if any Pain, sometimes in Parts only; these Adhesions frequently terminate the Complaint.

489. But it frequently happens that the inflammatory Action goes on to Suppuration; & the whole Cavity becomes the Seat of it, then the true Empyema takes Place; if the Suppuration is by Means of the Adhesions confined to certain Parts, then the spurious Empyema, or Collection of Matter not communicating with the general Cavity of the Thorax, is produced.

490. The Empyema will be preceded by violent Pains in the Thorax, difficult Respiration, quick Pulse, Rigors &c

491. The Empyema when present will have Symptoms peculiar to itself, together with the common Symptoms, & Symptoms from Sympathy of a Fluid contained in the Cavity of the Thorax.

492. The common Symptoms of a Fluid extravasated in the Chest are Difficulty & Frequency of Respiration.

Breathing easiest in some particular Situations. If the Fluid be in one lateral Cavity only, the Patient lies chiefly & most easily on the affected Side; if in both Cavities, then he will only lie on his Back, & that not horizontally, the Head & Chest will be elevated, otherwise he feels a Sense of impending Suffocation: there is a Sense of Weight in the Diaphragm: there are Patients who perceive the Fluctuation between them. Frequently Anasarca & sometimes Ascites is present.

493. The peculiar Symptoms of the true Empyema, are a great Difficulty & Uneasiness in expanding the Chest, great Lowness & Depression of Spirits, frequent Sense of seemingly impending Dissolution of the Heart &c. (494 omitted)

495. Water may be extravasated in the Cavity of the Chest, and the Disease then becomes a Dropsy of the Thorax; to the common Symptoms (492) and the sympathetic (494) may be added the Circumstance that the Fluid is suddenly collected.

496. Air may be extravasated in the Cavity of the Thorax, by a Wound in the Lungs from the End of a fractured Rib; here the Pleura being also wounded, the Air will escape into the cellular Membrane & produce a partial or a general Emphysema.

¶. Emphysema will often remain a considerable Time. Internal Parts do not fall so readily into the adhesive Inflammation as the more external Parts, hence the Wound continues open so long & admits of the Egress of the Air.

I believe the Presence of Pus or Water in the thoracic Cavity, will be alone accompanied with the anasarcous Symptoms; Blood or Air not producing these Appearances.

497. Blood may be extravasated into the Cavity

of the Thorax, & will occasion the common, & probably several of the other Symptoms.

498. For the Discharge of extravasated Fluid from the thoracic Cavity, the Operation for the Empyema, or the Paracentesis of the Chest becomes necessary.

499. This should be performed as rarely as possible, because (its Sequels) as being an Exposure & rendering the thoracic Cavity imperfect, is an universal Suppuration generally ending in Death.

Q. When Pus is present in the Cavity of the Thorax no Objection to the Operation can arise, for the Part is already in a State of Suppuration.

500. When Emphysema (496) in Consequence of wounded Lungs, arises & extends to a considerable Degree, the cellular Membrane may be scarified to discharge the offending Air.

501. The Scarification should be made at some Distance from the seat of the Fracture of the Rib.

502. The Lungs on the opposite Side, if only one Side is wounded, should not have their Action confined, nor should the Escape of the Air from the Cavity of the Thorax into the cellular Substance be impeded.

Q. If you make the Incision upon or near to the fractured Rib, with Respect to the Bone, you place it in the State of compound Fracture, and may induce all its ill Consequences, besides rendering the Heart an exposed Cavity, the Sequels of a comminuted Fracture will be hereafter shewn.

503. In the Case before us, tight Bandage applied on the Thorax & compressing the Parts which received the Injury is improper.

Q. This must be obvious from considering the Text (502). The Scarifications (501) need not be more than half an Inch long, but sufficiently deep to make Exposure of the Cavities of the cellular Substance; when much Blood is extravasated (497) the Paracentesis of the Thorax must be generally necessary, from the great Danger of Suffocation that must attend its Continuance in the Cavity.

Mr Hunter has sometimes seen Patients recover from Injuries of the Thorax, even when Suppuration has taken Place, as after Gun-shot Wounds; he finds it difficult to account for the Means of the Recovery, but thinks it must be a Thing of Resolution; for the Lungs in the Exposure of the Cavity of the Chest are generally collapsed, so that Adhesions between this Membrane & the Lungs in those Cases cannot be effected.

504. It will be difficult to distinguish the Inflammation of Suppuration of the Pericardium from that of the Pleura or Thoracic lateral Cavities; the Heart sympathising with Affections of the latter, & the latter with those of the Pericardium.

505. If Adhesion takes Place between the Heart & Pericardium, the Patient generally recovers. if the Inflammation goes on to Suppuration, the Patient is always destroyed.

506. The Adhesion of the Pericardium to the Heart, is attended with Palpitation of the Heart, Irregularity of the Pulse, frequent, difficult, and oppressive Breathing, Pain in the Sternum, frequent Syncope, Debility.

Q. To such Symptoms the Name of Angina Pectoris has been given.

507. The Peritoneum is the largest investing Membrane in the Body; it is subject both to spontaneous Inflammation & to Inflammation from external Injuries.

Q. By spontaneous Inflammation is signified an Inflammation arising without any visible Cause.

508. The Peritoneum taking an Inflammation runs through its Actions sooner than any Membrane or Cavity in the Body.

509. The Inflammation may be either common or erysipelatous / 301/ at the Outset it is difficult to determine its Nature.

510. Whether it is of the common or the erysipelatous Kind, it will at first be accompanied with a Violence of Action of the Constitution, which is powerfully roused, but if of the erysipelas

tous Kind, the Strength of the Patient will soon sink.

511. The peculiar Symptoms will be a Pain in the Abdomen, not of the cholicky or spasmodic Kind, with a Sense of Soreness of the abdominal Region, greatly increased by Pressure or by stretching the Peritoneum.—

512. The Intestines will also, from Sympathy, take on an unnatural Action, Costiveness in some Cases, in some Cases a Diarrhoea will be induced.

513. The Inflammation if it does not go off by Resolution, or unless Adhesions taking Place prevent its Cure, will produce Suppuration.

514. The Suppuration will be
a Partial, if Adhesions taking Place limit the Extent of it.
b Universal, if the adhesive Inflammation be insufficient either in the Time of its Duration or Degree, to produce Adhesions of the Membrane to the contained Parts.

515. If this Suppuration be universal, it always destroys the Patient, the Prevention of this State is therefore to be diligently attempted.

516. Bleeding seems the only Means we have of preventing Suppuration, & therefore should be had Recourse to; it should seem to be improper in the erysipelatous Species, but even there

we know of no other Means of avoiding of ye Suppuration.

517. When universal Suppuration of the Cavity happens, Trial must be made of opening the Cavity with a Trochar; evacuating the Fluid as much as can be, & washing the Part well by injecting warm Water.

518. When the Suppuration is partial, (v. 513. 482. 362.) the Matter frequently points outwardly, like any other Abscess; either Ulceration takes Place & it bursts or it is opened & the Patient does well; here is a striking Proof of the Utility of the adhesive Inflammation.

519. The lying in or puerperal Fever is a Sympathy of the Constitution, with an Inflammation of the Peritonaeum.

520. The Causes of the puerperal Inflammation of the Peritonaeum, arise, as well as of every other Inflammation of this Part, from a Stimulus of Imperfection which in this Case is given by the Uterus. Q. The Uterus in Dissection is generally found Sound & free from Inflammation; the Disease does not arise then from an Inflammation of the Uterus. But the Uterus conscious of some Change effected in its Nature, will give the same Stimulus to the peritoneal Cavity as would arise were the Uterus removed, & thus the Abdomen be made an imperfect Cavity: Parts may retain their Life

& yet give a Stimulus productive of Death to other Parts.

"This seems to be the Action of the Sympathizer, because more violent than that of the Sympathant."

The Dissection of Women dying of this Disease proves, in general, the fatal Affection to be a Suppuration of the peritoneal Cavity.

521. Sometimes after lying in, the adhesive Inflammation will prevent the Suppuration from extending itself far & an Abscess will form at the lower Part of the Belly & do well.

Q. Here Mr Hunter supposes the broad & round Ligaments of the Uterus most affected.

522. The peritoneal Suppuration will sometimes succeed to tapping, or the common Operation of the Paracentesis of the Abdomen.

Q. This most commonly takes Place with Patients with unsound Viscera & Peritoneum, & in whom the Disease has been of long standing; rarely the first Time of tapping, but not uncommonly the third or fourth. Mr Hunter has seen in the second Day after tapping the Inflammation spread over the whole Cavity of the Abdomen yet proceed no further, in which Case it does not kill; hence we should be cautious in our Prognosis of the Event of tapping.

On dissecting Patients who have died after

Tapping, the same morbid Appearances have occurred to the Examiner, as in Women dying of puerperal Fever, & the Symptoms have been the same during their Illness. Mr Hunter mentioned the Cases of two Men who died after Tapping & the Appearances on Examination after Death.

523. From what has been said it must appear that whatever can produce in the peritoneal Cavity the Stimulus of Imperfection, whether the Death of one of its contained Parts, external Violence or penetrating Wounds not healing by the first Intention, or by Adhesion formed ~~between~~ near the Opening, between the Membrane & some Viscus, may occasion the peritoneal Suppuration.

524. The Operation for the Bubonocele & femoral Hernia the caesarean Operation, may all be productive of the peritoneal Suppuration, because they all occasion an Exposure of the Cavity, to which Suppuration must succeed, if the Exposure continues long enough for the Cavity to take the Alarm.

Q. The Suppuration of the Peritoneum after the Operation of the Bubonocele & femoral Hernia do not happen, because the Sides of the Sac are brought together & closed before the alarm is given to the Cavity. In the umbilical Hernia after the Operation the external Parts do not adhere, but the Union must be formed by Suppuration & Granulation.

Here the Omentum should be made the Basis of the Granulation, that uniting with the external Parts, it may prevent the general Inflammation of the abdominal Cavity.

325. After the caesarean Operation & other Cases of Wounds into the Abdomen, Care should be taken to bring the Lips of the Wounds in Contact, but not to pass Ligatures, if Suture be used, so deep as to penetrate the Peritoneum.

¶ A. B. a crooked Woman was with Child & went her full Time; her Pelvis was so narrow & deformed that she could not have been delivered even with Crotchets. Mr Hunter delivered her of a living healthy Child by the caesarean Section, immediately on its Contents being removed, the Uterus contracted strongly, the Lips of the Wound were brought together by the uninterrupted Suture; the Woman died soon after; on Dissection the small Intestines were found adhering about the Wound, the Uterus was very much contracted, there was a Quantity of extravasated Blood likewise in the Abdomen; it should seem from this latter Circumstance that in similar Cases the Wound should not be closed until the bleeding ceases.

526. The internal Coat of the Bladder is liable to Suppuration on Exposure, though not very susceptible of it.

¶ Of this we have abundant Evidence in obser ving what happens during the Cure of Patients who have undergone Lithotomy.

527. The Doctrines (482-483) are further illustrated by the common Consequences of the Exposure of Cavities of Joints by penetrating Wounds, which if they heal not by the first Mode of Union, a general Suppuration takes Place, for here, there being no contained Solids, as in the abdominal & thoracic Cavities, where Adhesions forming might prevent the general Extension of Suppuration, an universal Suppuration of the Cavity must be the Event.

8. Joints as consisting of ligamentous & membranous Parts, have their Process carried on slowly: We see the worst Consequences follow the Suppuration of the Joints: the Loss of Limb & even the Life of the Patient is no unusual Sequel; if a Cure be effected it is by Granulation, & the Granulation afterwards for the most Part becomes bony, & thus the Joint is rendered motionless.

529. Granulations forming, though they effect a cure, alter the Structure of the Parts, hence the Utility as a Joint is lost, Motion is destroyed, & an Anchylosis takes Place.

530. Hence it is evident that Surgeons when they incautiously cut into a Joint for the Purpose of removing any extraneous Body, as a loose Bone or Cartilage, or for evacuating Fluid

as in Dropsy of a Joint, should always be extremely attentive to procuring Union by the first mode & of avoiding every Circumstance, that can tend to interrupt it.

Q. Therefore, Sutures, penetrating into the Cavity of a Joint should be avoided.

531. The Sacculi mucosi are similar in their Nature & Use to Joints, & contain a Fluid to facilitate Motion, the Consequences of Injuries done to them, will be similar to those inflicted on the Cavities of Joints.

532 They are subject to Dropsy, & when affected with it are to be cured by obliterating their Cavity, this is generally followed by a Weakness & Stiffness of the Parts to which they belong, but this is soon relieved by giving them Motion.

Q. 531. 532. The Sacculi mucosi are found between Bone & Tendon, between Cartilage & Tendon, between Bone & Skin, between Ligament & Skin; so between the Patella & the Skin, the Olecranon & the Skin, the annular Ligaments of the Finger & the Skin &c &c (532) Obliterating their Cavity &c. This is done by opening them, preventing the Lips of the Wound uniting by the first Intention, & so making Suppuration & Granulation necessary; on the same Principle is the Dropsy of these Parts as that of the Tunica vaginalis, or Hydrocele, which will hereafter be explained.

533. The Chambers of the Eye are subject to the suppurative Inflammation, which may have its Seat in one Chamber, as the anterior, only.

534. The Causes of this may be whatever can give the Stimulus of Imperfection to the Cavity, whether spontaneous Inflammation not terminating by Resolution, or a Wound not healing by the first Mode of Union; hence it may follow the Extraction of the Cataract &c.

535. By Inflammation of the Chambers of the Eye, the Iris may be made to adhere to the crystalline Lens.

536 – The Formation of Pus in the anterior Chamber of the Eye, will obstruct the Passage of the Rays of Light, similar to an Opacity of the Cornea.

537. It will produce an Appearance of an opaque Cornea, which indeed may be complicated, or it may be single, no Opacity of the Cornea being present.

538. When single it may be distinguished from an Opacity of the Cornea, by the Pus forming in the anterior Chamber a Section of a Circle, a strait Line forming its superior Side; as the Accumulation of the Pus increases, its Figure approaches nearer & nearer to a perfect Circle, till at Length it entirely covers the Pupil: However, when fully confirmed it is not easy to be ascertained, whether it is complicated with an Opacity of the Cornea or not.

539. In general if the Disease be of long standing the Cornea is opaque.

540. The Removal of the Pus is obtained

a By Absorption into the System.

b By Ulceration of the Cornea evacuating it;

c By an artificial Opening.

541. a is the most desirable Mode of Cure, as if the Cornea be not opaque, Vision is readily restored.

b is the worst Mode of all, being invariably followed by Blindness from the Cavity becoming obliterated as in other Abscesses, from the Union of [illegible] to the cicatrizing Ulcer, & from the shrinking or wasting of the Eye. Therefore,

c is to be preferred, though even from this Mode small Hopes of restoring Vision can be entertained.

f. A Gentleman had an Inflammation of the Sclerotica, but the Cornea remained transparent; he had darting Pains in the back Part of his Head, with Lassitude &c. A white Speck appeared on the Cornea which being a Collection of Pus, gradually increased; at length the Suppuration filled the whole anterior Chamber, & the Matter was let out by an Incision, similar to that for the Cataract: on the 5th Day the Eye appeared flat, the Iris and Pupil could hardly be seen; 6th Day the Cornea was rendered full by a thinner & more transparent Fluid; 8th Day Matter was visible at the

Bottom of the Cornea; in the End the Eye was lost, as to its Vision & diminished in Size.

542. The Veins are not to be considered as Canals but as Cavities, & like other Cavities the internal Coat is liable to the adhesive as well as the suppurative & ulcerative Inflammations.

543. The Causes of the Inflammation of Veins, are to be the same as those of the Inflammation of other Cavities, whatever can produce the Stimulus of Imperfection in them will bring on Inflammation.

4. The internal Coat of a Vein may inflame from the Puncture made in bleeding should it not heal by the first Intention.

Therefore, in bleeding, the Surgeon should always be careful that his Lancet is very sharp, & that after stopping the Blood he well closes the Orifice. When the Arm bleeds a second time after Venaesection from the same Orifice, a sore Arm is no unusual Consequence; this arises from the Orifice not healing a second Time without Inflammation. Linen or Lint is a better Application after bleeding than sticking Plaster, for obvious Reasons. There are more sore Arms after bleeding where sticking Plaster than where Lint has been used. Sore Arms after bleeding have been attributed commonly to the Wound of a Nerve, but Mr. Hunter thinks they more commonly arise from an Inflammation attacking the internal Coat of the Vein. If when Horses are bled, the Farrier is not careful to produce Union between the Edges of the Wound a Suppuration not unfrequently attacks the internal Surface of the Vein, & if it extends, as it sometimes does, to the Heart of the Animal, it dies.

Adhesion, Suppuration and Ulceration may all be going on in a Vein at the same Time, as Mr. Hunter found in examining the Body of a Man in St George's Hospital, who died after bleeding. We sometimes observe a Chain of Abscesses in the Course of the Vein after bleeding in the Saphena when Suppuration takes Place a Compress on the Vein above the Seat of the Suppuration is useful, both to produce Contact between the Sides of the Vessel and Obliteration of its Cavity, & also prevent the Blood conveying the Pus onward towards the heart.

544. If the adhesive Inflammation take Place in any Part of a Vein, its Cavity is obliterated and a Cure is performed.

545. Suppuration arising, if by Means of Adhesion taking Place above the Point suppurating, a single Abscess will be formed, & no ill Consequences arise. but 546

546. The Inflammation & consequent Suppuration may extend, in Default of the adhesive Inflammation setting Bounds to it, through the whole Course even to the right Auricle of the heart or Pus may be formed & carried with the Blood to the Heart either of which Circum=

[illegible] taking Place, kills the Patient.

547. The internal Coat of the Arteries is not liable to Suppuration, they will however take on the adhesive Inflammation.

¶. This we see by observing the Effects of a Ligature put round an Artery. Mr. Hunter has never seen an Artery suppurate except once, & that was the immediate Consequence of a Mortification.

548. Brain. We should be extremely cautious how at any Time we open or wound the Dura Mater, as the Exposure of the Pia Mater & Brain is in general productive of fatal Consequences; the Brain will inflame, swell & protrude, through the Opening of the Dura Mater, as the Cutis throws out a Fungus through the Opening of the Cuticle in the Whitloe: Suppuration will take Place, but the Patient will be destroyed before a Cure can be effected.

549. Hydrocele. The Tunica vaginalis is a circumscribed Cavity; when exposed, the same local Circumstances, as in the Exposure of other circumscribed Cavities, take Place.

¶. This being the Case, it is to be observed that when the Cure is attempted by Seton, the Water being suddenly evacuated, the Tunic collapses; now though the Seton as a foreign Body may excite Inflammation, yet the Tunic, at the Time of producing the Inflammation, being in Contact with the

Testicle, it is not certain that the Inflammation will extend over the whole Cavity, but it must, in general, have its Progress bounded by the Contact of the Membranes (362).

550. It is unnecessary that we should carry this Idea in our Minds, when we propose for the radical Cure of the Hydrocele, or proper Dropsy of the Tunica vaginalis.

551. The Hydrocele is of two Kinds.

1st. Where the Fluid is collected between the vaginal Coat & the Testicle.

2d. Where the Fluid is contained in an Hydatid adhering to the Tunica vaginalis.

552. We know little of the Cause of the first Kind of Hydrocele, & of the Cause of the second we are totally ignorant.

4. Mr. Hunter, in his Lectures, took Notice of the anasarcous Hydrocele, but as that is a mere Symptom of Anasarca, & has Nothing to do with the Doctrines we are now illustrating it becomes not an Object of our present Attention.

A diseased Testicle is frequently the Cause of the first Kind of Hydrocele; we shall have Occasion to speak of the diseased Testis hereafter.

553. The radical Cure of the Hydrocele is to be obtained by no other Means than the Obliteration of the Cavity which is the Seat of it; this Obli-

teration is accomplished by

a Inflammation, by which the Surface of the Tunica vaginalis & Testicle must be united, so that the Cavity between them shall no longer exist: or

b a total Removal of the Membrane, forming the Cavity, that is the Tunica vaginalis.

554. The first Purpose is fulfilled by one of three Operations.

a Caustic

b Seton & Tent.

c Incision.

Q. Whichever Mode of Operation is chosen, Suppuration is to be expected, since we cannot promise a certain Cure by Adhesion only: no one can have a great Superiority in Point of Utility over the other; different Men will have different Opinions in making their Choice.

555. The second (b. 553) by the Excision or dissecting out of the whole of the Tunica vaginalis, except where it adheres at the back Part of the Testicle.

Q. This must be a certain Mode of Cure, for it is not only removing the Disease, but taking away the very Seat of it; the Severity of the Operation, however, together with its being followed by more violent Inflammation & greater Danger has brought it generally into Disuse.

556. No certain Cure can be performed unless the whole Cavity be obliterated, if any Part of the Tunica vaginalis should not adhere to the Testicle, the Disease may return. for.

557. In this as in all other circumscribed Cavities, the adhesive Inflammation may take Place only in a few Points, & thus the Perfection of the Cavity may still be preserved; & consequently the Stimulus of Imperfection will not be given to the internal Surface of the Cavity.

q. Mr. Hunter experienced the Truth of these Remarks in a Patient upon whom he performed the Operation for the radical Cure by Seton: soon as he evacuated the Water, the Tunic collapsed, the Inflammation excited by the Exposure was not general, consequently the Cavity was not obliterated. Within two Years the Disease returned. Stimulating Injections have been practised to bring on the adhesive Inflammation & thus obtain a Cure, but here we shall be too frequently foiled and in this Mode we can depend but little.

358. The adhesive Inflammation will rarely effect the Cure; in general an universal Suppuration must take Place, before the Purpose of the Surgeon can be accomplished.

559. Tapping for the Hydrocele, the Wound

not healing by the first Intention may also accomplish the desired Effect; the same Circumstances here take Place as in the Peritoneal Cavity, after tapping for the Ascites; or Accident, or a Bruise producing a Rupture of the vaginal Coat & a Diffusion of its Contents through the cellular Substance of the adjacent Parts, if followed by Inflammation of the Tunic may also effect a Cure.

9. It has been usual to divide the Cure into the palliative & the radical, of the former, unless when it accidentally becomes the Cause of the latter we have very little to say, since it teaches Nothing respecting the Exposure and Inflammation of Cavities; it is needful only to observe that the palliative Cure consists in puncturing the Tumor with a Lancet or small Trochar, & thus evacuating the Fluid but it is rarely that this Mode does not require Repetition throughout the Life of the Patient.

The palliative Cure should not be attempted unless the Patient can lie by for some Time, because sometimes Inflammation succeeds & the radical Cure with all its Circumstances takes Place, when the palliative only was intended.

560. It is to be remembered that the Operation for the Hydrocele is not necessary for the Pre-

servation of the Life of the Patient, or the Support of his Health, but only for the Removal of an Inconvenience; therefore the Danger of the Operation is to be balanced against the Extrication of the Patient from present Trouble.

561. If a radical Cure for the Hydrocele be resolved upon, we are then in our Choice of the Mode of performing the Operation to consider

1st. The comparative Danger of the different Methods,

2d. The comparative Certainty of Success of the different Methods.

3d. The State of the Testicle.

562. The greatest comparative Degree of Danger attends the Operation by Excision; which is therefore, perhaps, never to be advised; this Danger will arise from the Sympathy of other Parts & of the Constitution with the Testicle in this Mode of operating, so ~~tenderly~~ rudely handled and so entirely & suddenly exposed.

563. The Mode by Excision is most certain in its Success; next to that the Mode by Incision, & the Caustic & the Seton are less sure in their Effects.

4. Inflammation arising in Consequence of any Operation, it is no unusual Consequence for a considerable Quantity of coagulable Lymph to be thrown out, surround & give the Appear-

rance of Enlargement to the Testicle: this Effusion of coagulable Lymph, forms also the Sloughs that are thrown off in the Process, when Suppuration takes Place, & which were by the Author of a late Publication considered as sloughings of the vaginal Coat, to which he imputed the Cure by Caustic, but the vaginal Coat rarely sloughs, the Sloughs discharged being generally false Membranes made from coagulable Lymph; now & then, however, when the Tunica vaginalis is in a diseased State, a partial sloughing of it may take Place.

The Circumstances which may give the Appearance of an enlarged & diseased Testicle deserve particularly to be attended to as otherwise a Surgeon may be induced to remove it as schirrous and incurable, the Testicle requiring no such Operation.

Case — A Man laboured under a Hydrocele, the Tumor inflamed, suppurated & at length ulcerated; the Surgeon enlarged the Opening and finding the Testicle apparently enlarged and supposing it schirrous, was about to remove it. Mr Hunter was desired to attend the Operation; he found the Appearances of the Tunica vaginalis too general for the Complaint, in his Opinion, to be cancerous. The History of the Case confirmed this Opinion; the Patient being extremely timid, there was no Difficulty in getting the Operation took on: it was performed, he recovered from his Ailment by very simple Means.

Further respecting the State of the Testicle, it becomes necessary, particularly to attend to it, that if the Disease requires, it may be extirpated, without the Necessity of a second Operation. Care should be taken to distinguish a swelled Testicle from a Dropsy of the Tunica vaginalis, if the Tumor consists of the latter, it will be mostly pyriform, if the former, it will be flatted: this Attention to the Appearance added to the Resistance of the Feel, will mostly preserve the Surgeon from Error.

Again, in the Hydrocele, the Situation of the Testis should be ascertained, that we may not, if we have Occasion to tap the Tumour, be in Danger of wounding it.

Mr Hunter by Accident wounded a Testicle four Times, & yet no ill Consequences supervened, which is somewhat singular, as so much Mischief frequently follows the slightest Injury of this Gland.

A pulpy Testicle will be very apt to be mistaken for a Hydrocele.

Again, respecting the State of the Testicle, we should take Care to distinguish a scrofulous Testicle from a cancerous one. Mr Hunter never saw a Cancer of the Testis follow the radical Cure of the Hydrocele.

The best Means of ascertaining the Situation of the Testicle and whether this Gland forms the Tumor is the Sensation the Patients experience in squeezing the Tumor; if it be a diseased Testis, the Pain is the same in one Part; if only a Hydrocele, Pain is felt on pressing that Part alone in which the Testis is situated.

564. All the Modes of operating give us an Opportunity of examining into the State of the Testis, that by Caustic alone excepted; the Mode by Incision gives the best Opportunity.

565. The Mode by Incision, being the most simple of all, more certain, yet not more dangerous than either Caustic or Seton & more safe & easy than that by Excision, is probably to be with Justice preferred; it is performed by making an Incision three Inches in Length, or throughout the Length of the Tumor, into the Cavity containing the Water, which being evacuated Poultice or Crumb of Bread is to be introduced every where between the two Tunics & kept in by Means of Lint stuffed into the Mouth of the Wound: Rags wetted in Brandy or Spirit of Wine should be kept on the Scrotum & often renewed to prevent the too sudden coming on of Inflammation, & the Scrotum should be suspended in a Bag Truss.

566. The Advantages of knowing whether a Testis

is diseased or not, is that if found so in a considerable Degree, it may be removed without the Patient undergoing a second Operation.

567. We cannot perhaps a priori determine whether the Disease be a Hydrocele of the Tunica vaginalis, or the Water be contained in an Hydatid; nor is this Knowledge of Consequence in the Cure, as in both the same Mode of Treatment is to be observed, but the Consequences of an Opening into the Tunica vaginalis will be different from those of wounding an Hydatid.

568. In the former 'tis the sympathetic Affection usually following an Exposure & Inflammation of the Testicle will come on, such as Rigors, Nausea vomiting dull Pain in the Back & Loins, great Sense of Lassitude, swelling of the Testicle. these will in general come on in twenty four Hours after the Operation: but when an Hydatid is opened, as the Body of the Testicle is not exposed, these will not arise, but only the common Circumstances of Inflammation, as Heat, Soreness of the Scrotum &c

9. In Cases where the Hydrocele has been tapped, we should be led to suspect that the Cicatrix left at the Puncture would be the proper Part to perform an Operation again, either for the palliative or for the radical Cure, but this is not always the Case, for the Testis sometimes

adheres to the Cicatrix, & if this Rule be observed, would be wounded; in Consequence, after the Symptoms, following the Operation for the radical Cure, abate, an Enlargement of the Parts always remains, which is not an Enlargement of the Testis, but only a Thickening of the Tunica vaginalis, this gradually subsides, & the Parts return almost to their natural Size, which Diminution may be forwarded by rubbing in Mercurial Ointment.

Hæmatocele is an Extravasation of Blood into the Tunica vaginalis, it is not of much Consequence to distinguish from the Hydrocele, as the same Treatment is adviseable, but it must be carefully distinguished from an enlarged Testicle; sometimes the Contents is only extravasated Blood coagulated, sometimes coagulated Blood & Serum, & sometimes the Coagulum be found to have become vascular.

569 - The Treatment of both (560) will be the same as in Inflammation in general, but the Scrotum must be, necessarily, suspended.

Q. Further Remarks on the Cure of Hydrocele, by Seton or Tent & by Caustic.

If the Seton be used Care should be taken that the Skein of Silk or Thread be large enough, to fill up the Wound made by the Lancet or Seton Needle, & thus by plugging it up prevent the Escape of the Water, untill a general Inflammation has taken Place, for the Water keeping the Tunic every where distended, partial Adhesions will be prevented, & the Influence of the Operation become general (§566. 5). The Seton should be passed in the perpendicular axis of the Tumor; the Place of Choice for the Tent, should be neither at the upper or lower Part of the Tumor, but about Midway. the Water should not be suffered to escape before the Tent is introduced, for the same Reason as the Confinement of that Fluid is recommended where the Seton is used. Sponge Tent is preferable.

Caustic – There is an Uncertainty how deep the Caustic will act, should it not penetrate so as to include the Tunica vaginalis in the Eschar, we shall be under the Necessity of making a Puncture ~~a Tent~~ through that Membrane, & we shall gain no Advantage from the Use of the Caustic.

When the Eschar is sufficiently deep, the Inflammation of the Cavity takes Place before the Water is discharged, which here also prevents partial Adhesions & an imperfect Cure; but the Uncertainty of the Action of the Caustic is an Objection to its Use.

It may happen that the Testicle may lie upon the fore Part of the Tunic, & its Sitration not be known, or not attended to by the Operator; if in performing the radical Cure by Incision, he finds he is cutting on the Body of the Testicle, he should carry his Knife more to the lower & outer Part of the Tumor in finishing his Incision, for Fear of cutting the spermatic Artery, an Accident that has happened.

570. Fractures. - The Bones as well as the soft Parts are subject to every Stage of Inflammation, either arising spontaneously, or being induced by external Violence, & when their Continuity is divided they are reunited by Processes similar to those which we observe take Place in the soft Parts.

571. Bones are liable to Solution of Continuity from external Violence, Solution of Continuity in Bone is called Fracture.

572. Fractures in Bones are either

a Simple.
b Compound.
c Compound simple.
d Simple compound.

By a simple Fracture is meant a Solution of Continuity in a Bone, without a Wound communicating externally.

573. By a compound Fracture is meant a Solution of Continuity in a Bone, with a Wound com

municating externally, which does not heal without Suppuration & Granulation.

574. By a compound simple Fracture is to be understood a Fracture which has a Wound communicating externally, but which Wound heals either by the first or second Mode of Union & without Suppuration.

575. An [illegible] compound Fracture takes place where originally there was no Wound communicating externally, but where in Consequence of some [illegible] principally from any cause ulceration of the Integuments is induced necessarily, the circumstances of a compound Fracture are induced.

576. Previous to our entering upon Diseases, or the Mode of Restoration in Bones, it is necessary to consider the two following Divisions.

577. Bones consist of an inanimate earthy Matter, attached to a living organized Substance.

578. Bones may either be in a dead or a diseased State; between the Death & Disease of a Bone it becomes necessary [illegible] to discriminate.

579. It has been usual to distinguish all unnatural States of the Bones by the Name of Caries. Caries was divided into moist & dry; moist seemed to imply a diseased State of the Bone, dry, the Bone becoming dead. The converting the moist into the dry State the Cure was

frequently accomplished. Vide this explained from 507. 597. 632.

The Term Caries signifies a Rottenness in the Bone, it is evident this was improperly applied to Bones becoming dead, because a dead Bone is generally very firm, & without the least Appearance of Rottenness; indeed it is much more firm and solid than the Margin of Separation in the living Bone, which had thrown it off.

579. Bones fall more slowly into Disease than soft Parts, & when they become diseased are proportionably slower in the Act of Restoration, for ~~the~~ all the Processes go on more slowly & difficultly in Bones than in soft Parts.

580. It will be necessary also to consider the Doctrines advanced in (352. 358. 359. 361. 362. 482.)

581. Also that Bones receive their Nutrition & means of Support chiefly from the Periosteum, or Membrane covering the Bones (382) different Bones varying much in their Structure, their Diseases will vary, as well as the Readiness with which they go through the Process of Restoration.

582. When a Solution of Continuity happens in a Bone from external Violence, productive of simple Fracture (572) the Cure may be effected by the first Mode of Union, without either Inflammation or Suppuration. In simple Frac-

tures, though Accident produces a Rupture of several Blood Vessels and an immediate Effusion of Blood into the Cavity made by the Division of the Bone, if the Oeconomy of the Parts be not very much disturbed by this Violence, the Blood retaining the living Principle, the red Part & Serum are soon absorbed & the coagulable Lymph alone remaining becomes vascular; the Cure is accomplished with little Pain & without Disturbance of the general System.

583. If so much Injury be done to the Parts, that a considerable & unusual Action is necessarily excited in them the first & most simple Mode of Union will not take Place, but the specific Inflammation or that which is perfectly similar to the adhesive Inflammation in soft Parts arises, coagulable Lymph is poured out into the Cavity, (now similar in its Nature to any circumscribed Cavity) which is to form the Callus, this becomes vascular, at Length cartilaginous & lastly ossific Matter as in the first Formation is deposited, & then the Cure is accomplished. Here Pain, Tumefaction of the circumjacent Parts & the common Symptoms of the adhesive Inflammation takes Place.

584. In the compound Fractures [illegible] the Cavity made by the Division of the Ends of the Bone becomes exposed, from the Fracture being comm

cated with a communicating Wound: the Blood effused does not as in 582 retain its living Principle the Stimulus of Suppuration obliges the Cavity to set up a new Process, Suppuration on takes Place, & the only Means of Reunion left are those of Granulation.

585. As in Wounds made into circumscribed Cavities; if the Lips of the Wound come into Contact & unite either by the first or second Mode of Union before the Stimulus of Suppuration gives the Alarm to the Cavity, a Suppuration of the whole Cavity does not necessarily take Place; so in the compound simple Fracture, if the external Wound be thus made to unite before the Blood effused into the Cavity has lost its living Principle, & the Stimulus of Suppuration has given Rise to a new Process, the Cure may be accomplished with the same Ease as in the simple Fracture.

586. But it may occur that either a Splinter of Bone being detached & dying or the extravasated Blood losing its living Principle, or from a misplaced end of the Bone producing Ulceration of the Integuments, or an irrecoverable Injury being done to the Parts covering the Bone that [illegible] may be the Exposure of the Cavity is produced, in this Case which we term a simple compound Fracture, the same circumstances

will take Place as in the compound Fracture.

587. When a Part of a Bone becomes dead Exfoliation or the throwing off the dead Part from the Living must take Place. In what the Process of Exfoliation consists we will hereafter shew.

588. When a Surface of a Bone is exposed, it is very common for a Portion of it to become dead; & a Necessity for the Process of Exfoliation to take Place. For the Bone receiving its Nutrition from the surrounding Periosteum that being destroyed, or becoming dead a Part of the Bone must lose its Means of Support.

8. It can rarely happen that any large Portion of the Periosteum shall be destroyed or become dead without a consequent Death of a Portion of subjacent Bone, if only a small Extent of Periosteum be destroyed Exfoliation of the Bone does not always follow because its Life will still be supported by Means of its Vessels anastomosing with those which pass from the Periosteum nearest to the exposed Part.

589. The Union of broken Bones is more slowly accomplished than that of the soft Parts because in the former two Processes are to be accomplished: viz the Formation of soft Parts & then the Formation of Bone.

590. The Ossific Inflammation arises, when there is an increased Disposition in a Part to form Bone.

591. It consists in the Vessels of the Bone & the Parts covering the Bone, taking on the same Action as the Vessels of the soft Parts do in the adhesive Inflammation.

592. The Consequence will be similar, for it will produce Tumefaction & Enlargement of the Bone; if extending from one Bone to another, between which & the other there is a natural Motion, it will produce Anchylosis, like as adhesive Inflammation produces Immobility in the soft Parts to which it extends; it will be followed occasionally by Suppuration & Ulceration.

Q. Of this we have Instances in Anchylosis of the Vertebræ of the Spine, especially in Horses; between two or more of the Vertebræ of these Animals it is common to have an Anchylosis formed.

593. The Causes also of the Ossific Inflammation will be similar to those of the adhesive, external Violence, as Exposure or Pressure, a Necessity for Action in the Vessels of the Bone or its Membranes &c may give Rise to it.

Q. Pressure will not uncommonly occasion Ulceration & Absorption of Bone, but it may also excite the Ossific Inflammation and a thickening of the Bone.

594. The final Intentions for which the Ossific Inflammation may be employed are first, to produce Restoration of Parts & Reunion in a diseased Bone, & secondly to strengthen weak Parts.

595. The Seat of Disease in Bone can only be in

its living Parts.

596. The more spongy & soft the Bone is, or the more living Matter it contains the more liable it is to Disease; the harder the Bone, the less ready it is to fall into Disease, but a Death of some of its Parts is more easily induced.

597. When a Bone becomes diseased, it is our Business to endeavour to get the better of the Disease, but when a Bone becomes dead, Nothing can be done but to produce Exfoliation.

598. The Treatment of diseased Bone is rendered difficult by the Impossibility in general of discovering the Extent of the Disease.

599. The Inflammation & Suppuration may have their Seat either in the Surface of the Bone, or within the Substance of the Bone, or in the medullary Substance.

600. Hard Bones becoming diseased are more difficult of Cure than soft ones, & when cured are more liable to fall again into a diseased State.

601. Bone is liable both to Ulceration & interstitial Absorption.

602. When a Portion of Bone becomes dead, the Process of Exfoliation is performed by the dead Bone giving a Stimulus to the living Bone in contact with it, & to which it adheres by the Attraction of Cohesion the living Parts immediately in Contact with the dead Bone are ab-

sorbed, & a Cavity between the dead & living
Surface is formed, the former being now a mere extraneous Body, is according to a Law in the animal Oeconomy, carried from within outwards & at Length thrown off from the Body Surface; Ulceration of the Integuments having made Way for its Exit, the Cavity is filled up with Granulations which become new Bone.

2. The first Appearance of Separation, in Order for Exfoliation is a Sponginess in the living Bone now becoming more vascular, then a Groove is formed in the Direction of the Fibres that surround the dead Bone: the living Bone becomes more softened & more porous; Part of the dead Bone seems sometimes absorbed, for it has the Appearance of having undergone Ulceration; it is certain the Absorbents have the Power of taking up dead Bone; the Absorption begins at the Circumference & is continued to the Centre. In the Skull they become first membranous, Nature observing the same Order in the Repair of Bones as in their first Formation: a Pulsation in the Granulation often attends the Exfoliation of Bone: Granulations will sometimes arise, shoot over the Surface of the Bone to be exfoliated, & prevent its being thrown off so soon as it would otherwise be, in this Case it excites new Inflammation & Ulceration.

603. Granulations will arise from the Surface

of Bone without Suppuration having preceded; but this is only where that Surface has not been exposed by a penetrating Wound.

4. the Granulations forming Bone irregularly become often a considerable Obstacle to the Cicatrization of the Ulcer after the Process of Ossification &c is finished.

604. A thickening of the Periosteum & Integuments has often been mistaken for an Enlargement of the Bone.

605. A Bone may be enlarged without any Alteration in its original Structure, by bony Matter being formed on its natural Surface; this laying in of new Bone will arise from the ossific Inflammation taking Place on the Periosteum or on the Surface of the Bone; we call this adventitious Bone.

606. Or, a Bone may be increased by the ossific Inflammation taking Place in its Substance, which causes an Alteration in its Structure, and Enlargement of its Dimensions.

607. A Bone may be increased in Size at the same Time that there is ~~no~~ an Absorption going on in its Substance, for the ossific Inflammation may be laying in new Bone on its Surface, at the same Time that Absorption is removing Portions of its internal Surface; thus a Bone may at the same Time be increasing in

its Dimensions losing in its Quantity.

608. Suppuration may take Place either in the Surface, or in the Substance of a Bone.

609. Matter when formed ~~[illegible]~~ may be confined, if in the Substance of the Bone by the natural Bone remaining unulcerated through its Substance & there preventing its Exit or if on the Surface of the Bone by the ossific Inflammation forming a Case round it of new or adventitious Bone, but in the latter Case the Progress of the Suppuration must be rapid otherwise there will not be Time for the bony Case to be constructed, & the Matter will make its Way to the Skin, as in a common deep seated Abscess.

610. Matter may also be confined on the Surface of a Bone for a considerable Time, simply by the thickening of the Periosteum, just as it is confined by a Fascia in a Whitlow.

611. The Periosteum or the cellular Substance connected with it may take on the ossific Inflammation.

612. Suppuration taking Place in the Substance of a Bone & the ossific Inflammation being also taken on the Surface of the Bone & the Parts covering it, the Matter will produce a Disposition to the ulcerative Absorption which will be continually removing large Portions of the internal Surface of the Bone: the ossific Inflammation at the same Time depositing new Bone on the out side;

thus the Bone may be enlarged to any Size, and these two Processes Absorption within & ossific Deposition without going on together, the Dimensions of the Bone shall be wonderfully increased at the same Time that, perhaps the original Bone shall be entirely removed & even some of the internal Parts of the new Bone shall be taken away, & at last instead of a solid Bone, only a large bony Case shall remain, from which at length the Matter shall be evacuated. Ulceration from within may however go on even after the Matter has made its Escape.

613. Ulceration is the Agent of Separation it removes the Effects of the ossific Inflammation; when Ulceration has gone through the Surface of a Bone it attacks first the Periosteum next the Muscles, & lastly the cellular Substance & Skin.

614. Bones when the first & second Mode of Union fail are as heretofore observed, cured by the Formation of Granulations & these taking on the ossific Disposition.

615. But it sometimes happens that the ossific Disposition shall not be taken on by the Granulations between the Ends of the Bone so that there shall be no Union by the Bone; the restorative Process going no farther than the Production of Granulations, or the Change of them into Cartilage

616. It sometimes happens that no Union at all takes Place between the separated Ends of the Bone, even after a simple Fracture, in this Case a new Joint is formed, the Ends of the Bones become covered with Cartilage, & as in all other Cavities, a Power of secreting Synovia is given to it, & it is in every Respect similar to any other Joint, except the Want of the proper moving Powers, that is corresponding Muscles, these not being generated, the new Joint becomes extremely inconvenient.)

617. Ossific Inflammation may terminate in a Suppuration, or the Bone may remain swollen but indolent.

618. Exfoliation of Bone is of three Kinds - viz.

a External
b Internal
c Mixed Exfoliations.

619 The Process of simply external Exfoliations has been already explained 602. It happens also that an internal Part of a Bone shall become dead; becoming dead, it gives a Stimulus to the surrounding living Parts; as an extraneous Body it must be thrown off; for all Parts, as has been shewn, admit readily of the Passage of foreign Substances from within outwards; hence from its Stimulus the ulcerative Absorption is finally produced in the surrounding Parts

& a Passage is given at last to the dead Bone; in Consequence of the Stimulus, Granulations arise also & fill up the Cavity occasioned by the Separation of a Part of the Bone, & these Granulations becoming bony, the Cure is accomplished.

620. The mixed is when the external Exfoliation becomes an internal one, which is accomplished as follows.

At the same Time that the Process of Absorption goes on for removing the dead Bone from its Contact with the living Parts, the Parts in the Neighbourhood take on the ossific Inflammation, which in the End forms a bony Case round the dead Piece of Bone & prevents its Exit.

Q. Here Nature seems to be counteracting her own Ends, but the final Intention of this bony Case seems to be a hasty Attempt to obviate the Weakness in the Limb that might spring from the Extent of Death in the Bone.

621. Bones often become painful before a Swelling of them is perceived.

622. The Matter discharged from diseased Bone, or where the Process of Exfoliation is going on, is of a Candable hue & is extremely disposed to act in tinging the Probe of various Colors.

Q. This happens

1st Because it is the Matter of diseased Parts,

2d Because the continual Irritation of

the Bone, like other Irritations, occasion a Flow of this Matter.

3.^d Because there is commonly some Blood mixed with it, which soon becomes putrid.

623. When the Skin is affected, that is, when the Inflammation of the Bone is communicated to the Skin, Suppuration commonly takes Place.

624. The Periosteum becoming inflamed, and its internal Surface taking on Suppuration, a Disease or Death of the more external Parts of the Bone may be induced.

625. The hard Bones, having fewest living Parts, & of Course, fewest Vessels, have their Life soonest destroyed by any destructive Cause whatever; it is scarcely possible to lay them bare to any considerable Extent without Death & Exfoliation being the Consequence.

626. Where the specific Inflammation, or the Inflammation of a Bone requires the Assistance of Art, it is to be treated by antiphlogistic Remedies & by insisting upon Rest being given to the Part affected, & if in the lower Extremities that the Patient lie in an horizontal Position.

When the Swelling of the Bone becomes indolent, the Parts are to be roused into Action, & if possible interstitial Absorption excited, by the Administration of Mercury both internally & externally. The Mezereon Root has been much recommanded as a Specific in the Enlargement of Bones.

Q. The Quantity of Mercury to be used may be somewhat less than that fitted for curing the Lues.

627. If the Seat of Suppuration be the Surface of the Bone or the internal Surface of the Periosteum, the Matter should be evacuated as early as possible, & this by simple Incision through all the Teguments down to the Bone, but without removing them & more especially if the Cranium be the Object of our Consideration.

Q. The Integuments need not be removed, because if Exfoliation is to take Place, it will prevent Granulation & the healing of the Wound which will not close while there is a Bone to be thrown off (See Doctrine of Gun Shot Wounds).

628. Sometimes in this superficial Suppuration Bones are so much diseased that they have not a Disposition for Restoration, & the Bone will not exfoliate unless the actual Cautery be used.

629. In Case of Suppuration in the Substance or in the medullary Substance of the Bone, (this is the worst Case by far) the Matter is to be evacuated by the actual or the potential Cautery or by the Trepan.

630. Bones which have undergone external Ulcera-

ties often fall into an indolent State, in which Case stimulating Dressings are to be used.

631. When the actual Cautery is applied we must use an Iron of a Thickness sufficient to give a Degree of Heat in Proportion to the Depth of the Bone. The Time of continuing its Application must also be in Proportion to the same Circumstance.

632. Cauteries may also produce a Cure of diseased Bones by inducing a Death of the diseased Part, & so rendering the Process of Exfoliation necessary, but in order to have this Effect their Action must produce the Death of the whole diseased Part.

633. The actual Cautery not only induces the Death of the diseased Part, but an Inflammation in the sound Parts, & this hastens the Separation of the Part to be exfoliated. The potential Cautery rarely does more than producing the Death of the diseased Bone.

634. a natural or spontaneous Exfoliation is however, much more to be desired than an Exfoliation produced by Art, because of the Uncertainty of our Endeavours to extend our Operation to the whole of the diseased Bone.

635. In specific Diseases producing a Disease in Bone & consequent Exfoliation; the Exfo

lization goes on more readily & quickly from the venereal Disease, than from Scrophula & others. In Scrophula the Extent of the Disease is more considerable whereas the venereal Disease is more partial & confined to a narrower Limit.

636. When after a Solution of Continuity in a Bone, the Cure proceeds no farther than the soft Union, the rest of the Limb should be disposed if possible to excite a further Disposition to the Act of Restoration in the Parts.

637. When the Fracture with the Circumstances (635) is in the lower Extremity Care must be taken by Means of Splints & Ironwork, that the whole Weight of the Body does not rest upon the fractured Bone.

Mr Hunter has seen Patients with fractured Legs in which firm Union would not take Place, untill they were set upon their Legs the fractured Bones being well supported & defended by Splints &c.

638. When a new Joint is formed, the like Precautions are also to be attended to.

639. But it may sometimes be desireable to attempt the Destruction of the new formed Joint & procure firm Union between the Ends of the formerly divided Bone: In this Case we

me to consider the Doctrine of Inflammation of Cavities & particularly that of the Cavities of the Joints, (258th)

640. The Mode of accomplishing this Purpose will consist in procuring in the new articular Cavity the Stimulus of Imperfection by making an Opening into the Joint & introducing some foreign Body to prevent the healing of the Wound by the first or second Mode of Union & excite universal suppurative Inflammation which being followed by Granulations & these Granulations becoming bony, the Ends of the Bone will be immoveably united.

Q. It must be evident that the less Time has elapsed since the Formation of the new Joint, the more readily its Destruction will be accomplished.

641. Diseases of Bone may have powerful Influence on the Constitution, we may readily conceive the Effects of a constant & long continued Pain, Want of Rest &c, which are their Attendants. We also know they will bring on Hectic, & this is accounted for by considering what is advanced on Hectic (4198)

642 When Ulceration has removed so large a Portion of the Bone, that the Remainder, on Account of its Weakness, shall be unable to support its necessary Actions; or where Disease extends through

a greater Part of the Substance of a Bone than Art can restore to Health, or procure a Separation from the sound Parts, or where there is an Inability in the Constitution to support the Disease, or the Processes necessary to healing

Amputation becomes indispensible.

643. In simple Fractures, if the Patient be healthy the Union of the Bones will be in general accomplished in three Weeks, but something sooner in the upper than in the lower Extremities.

644. Rest. Retention of the Bones in their natural Position, Freedom from Pain & the Prevention of Inflammation, are the general Indications in all Fractures of the Extremities. Whatever Position of Limb best fulfills these Indications is the Position to be recommended.

645. To prevent the Displacement of the Ends of the Bone, we use Splints & Bandages.

646. Of the different Species of Fractures enumerated (572) the compound is the most dangerous, & frequently attended with troublesome, if not fatal Symptoms, as Fever, Symptoms of Dissolution, Gangrene &c

647. We can rarely keep the Bones perfectly at Rest in bad compound Fractures, hence constant Irritation, Pain &c

648. The same Indications are to be fulfilled in the

compound as in the simple Fracture, /582/ We should move the Limb as rarely as possible. Poultices, though they should otherwise seem desireable Applications in compound Fractures, become injurious by their admitting of Motion in the Ends of the fractured Bone.

649. The simple compound Fracture is attended with less Danger than the compound, although the former also may produce troublesome and dangerous Symptoms

650. The Treatment of the Constitution when affected by the Consequences of compound Fractures, will be the best understood by recurring to /462 & 479/.

651. From what has been said it must be evident that when a Fracture of a Bone is complicated with a communicating Wound of the Parts that cover it, as Muscles, cellular Substance & Skin, it must be always the Duty of the Surgeon to endeavour to render the Case a compound of simple Fracture, to which End he will be careful to remove extraneous Bodies which may hereafter produce the Stimulus of Imperfection; to place & retain the Bones in their natural Position, & prevent their irritating the soft Parts, to bring the soft Parts into Contact one with another, in short to observe the

Rules laid down in Cases of Wounds into Cavities, & the Doctrine (682).

652. In Bones, as in soft Parts, the Observation, that all new formed are weaker than original Parts, holds good.

653. In Bones as well as soft Parts, the Process of Restoration goes on more readily in the upper than in the lower Extremities. Compound Fractures therefore, considered as Injuries done both to the Bones & soft Parts are more dangerous in the Leg & Thigh than in the Arm or Fore Arm.

654. Fractures of Bones which communicate with Cavities of Joints whether simple or compound, require peculiar Attention & peculiar Treatment as

1st The Fracture of the Patella

2d — — of the Olecranon

3d — — — of either Ancle.

655. Also when a Fracture happens near a Joint the Bone may be so splintered as to communicate with it.

656. In Case it be a Fracture attended with a Wound of the Joint communicating externally, the Wound must be healed, if possible, without Suppuration, which arising will occupy the whole Cavity of the Joint & too often produce a Necessity for Amputation.

657 If a simple Fracture communicate with a

Joint's Cavity, the Fluid of Union will escape into the cavity & form a Case similar to a compound Fracture.

658. The Fracture of the Bone will be here united by the third Mode of Union or Granulation, the first & second being lost by the Escape of the Bond of Union into the Cavity of the Joint, except that here there will be Granulation without Suppuration preceding, (683). In Case of Fracture communicating with a Joint it is apt in the Cure to produce a Stiffness or Loss of Motion in the Joint from the Blood escaping into the Cavity & becoming organized; in this Case as soon as the fractured Bones are united by Callus, it is necessary to give passive Motions to the Joint, often repeating them, & when the Callus is confirmed the Patient should diligently exercise the Part affected by constant Motion of the proper Muscles.

659. When the Patella is fractured the Union of the fractured Parts will be either by Bone or by Ligament.

660. If the fractured Parts remain in Contact, or very near to each other the Union may take Place by Bone as in the Fractures of other Bones, but if the fractured Portions are at a Distance from each other, Union by the Formation of Ligament will be the Mode adopted.

661. For, the Patella being employed in the Formation of a Joint, a Union by lengthening the Bone two or three Inches must have been extremely inconvenient to the Patient, & incompatible with the future Motions of the Knee.

662 The Patella being the Point to which the principal Extensor Muscle of the Leg is inserted, when fractured transversely the Muscle being now no longer confined, contracts itself, & draws the superior Portion of the fractured Bone to a considerable Distance from the inferior.

663. When the Union is formed by Ligament, as is always the Case when the fractured Bones remain at a considerable Distance asunder the Patella is very much lengthened & the two Points of Attachment of the Rectus Muscle being therefore brought much nearer together, the Muscle must be considerably shortened.

664. As the original Length of the Muscle is diminished, its Power of Contraction must be diminished in Proportion; for the two Ends of the Muscle have in Consequence of the Union approximated themselves nearly or entirely as much to each other, as they were accustomed to do in voluntary Motion: hence it is evident the Powers of extending the Limb must remain lost unless the Muscle acquires a new

Action thus accommodating itself to the present Circumstance

665 The Muscle, however, will acquire new Actions in Time, & moreover, will in Time be enabled to shorten itself; so that by its Contraction the Power of extending the Limb shall return to the Patient.

666. This Power will be the sooner restored if the Surgeon & the Patient join in their Endeavours to induce in the Muscle a Habit of acting.

667. This is to be done first by giving passive Motion to the Limb, & then by the Patient exerting himself attentively in exercising the Influence of the Will upon the Part.

668. For the Muscle being originally under the Influence of the Will if the Powers of Volition be resolutely & industriously exerted, will in Time recover its pristine Action, & voluntary Motion of it will be restored.

§. Lady B— broke both the Patellae: they were reunited by Ligament & she lost entirely the Power of extending her Legs, consequently was unable to walk; she had been in this State two Years. Mr H— then saw her — He sat her up on a Table, with her Legs hanging inflected over the Ends of it, he desired her to think attentively of extending her Leg, & try by the Powers of the Will to raise it forward; at first she

Mind had not the least Influence on the Leg, but by repeatedly determining the Influence of the Will to the Muscles, & repeating this Endeavour for two or three Days, she gained a trifling Power of extending her Leg; by persisting in the same Means she increased that Power so as to be able to extend them compleatly; she was then directed to raise her Leg with a small Weight affixed to her Toe; this Weight was gradually increased: at length she was set upon her Feet & obliged by an Attempt to walk to exert greater Force; by daily exercising the Muscles in this Manner, & gradually increasing their Labor she was at last restored to the Use of her Legs, which were before considered as irretrievably lost.

669. If the Union be formed by Bone, by the irregular Formation of Callus, a bony Ridge may be raised on the internal Surface of the Patella, which may impede the future Motions of the Joint.

670. It must be evident that the Knee should be kept straight, & that in order to the Retention of the Bones in their approximate State, we must apply a Bandage, rolling the Thigh from above downwards to prevent the involuntary Contractions of the Rectus Femoris; also that Rest should be insisted on: the Surgeon should repeat his

Motion of the Limb once in two or three Days, afterwards more frequently untill at Length the proper Time comes for the Patient to exert self Motion. (See Lady B—'s Case, 667)

671. The Union of the Bone will be much sooner accomplished by bringing the separated Pieces of Bone near together & keeping them in that Situation; for by this Means the Muscle will not lose its original Length & of Course its Power of Contraction; consequently less Difficulty will afterwards arise to the Patient of extending the Limb & the Evils of Irregularity of Callus & Stiffness of the Joint may be prevented by the Attention of the Surgeon.

672. When the Cure has been attempted, as soon as Reunion has begun to take Place, a slight Degree of passive Motion should be given to the Limb & as soon as Union is perfected, voluntary or self Motion should be insisted on.

673. The Olecranon is to be considered as a fixed Patella, & the same Principles, allowing for that Difference will apply to a Fracture of it.

Q. The Triceps Extensor Cubiti being fixed to the Olecranon, when a Fracture of that Process happens the superior Portion of the Bone will be drawn upwards by the involuntary Contraction of the

Muscle. In the Case the superior Portion is to be brought downwards, the Arm for some Time kept extended, until Reunion begins to take Place, & the Action of the Triceps is to be checked by Bandages: When Union is partly formed as after a Fortnight it mostly will be then passive Motion is given to prevent Stiffness of the Joint, & lastly when the Union is completed a voluntary Motion as in the Case of the Patella.

It is remarkable that in general the luxuriant Callus of a Bone is on the outside, if its internal Surface be exposed to the Action of moving Parts; thus a Ridge from a Callus in a fractured Rib is never on the inside of the Rib.

After Muscles have acquired a new Action, the next Step is to give them Strength, which must be done by frequent Exercise: It is to be observed that the greatest possible Contraction of a Muscle is somewhat more than the Motion of a Joint which it moves, admits of; hence when the Patella or Olecranon is fractured, the extensor Muscles will be shortened more than in voluntary Action.

674. When the Ancle Bones are fractured they are only to be considered as Bones making Joints, & not as liable to be influenced by the Action of the Muscles none of which are inserted into them; they are therefore to be returned if any Displacement has happened, to their natural Situation, & retained

in it by Bandages &c & when Union has begun to take Place between the divided Portions of Bone, passive Motion should be given to the Joint.

675. Cartilage is an animal Substance intermediate between the hard & soft Parts, approaching very much in its Nature & Properties to Horn. It has very few Vessels, is insensible, has very little Power of Absorption, is not liable to exfoliate, even when exposed & even scraped, never goes into the suppurative Inflammation nor even becomes the Basis of Granulations.

676. Cartilages may be divided into two Kinds

a – The permanent.
b The changeable.

677. The Order a are such as remain unaltered during Life; such are those of the Nose & Ear.

678. The Order b are twofold.

1st Those which at a certain Time become Bone for which before they served as a Substitute; such are the Epiphyses of Bones, which in the Infant are cartilaginous, in the Adult are bony.

2d Those whose Change into Bone takes Place at an uncertain Period of Life & sometimes are never changed into Bone as the Cartilages of Ribs & the Ends of cylindrical Bones.

679. When Cartilages are exposed they do not exfoliate like Bones nor do Granulations arise from them but Granulations arising from the circum-

jacent soft Parts on all Sides shoot out & meet over them, thus closely covering them without Adhesion.

4. Mr. Hunter has once seen Cartilage die, become black & be thrown off with a Portion of the Bone lying under it; this is also the Case in white Swellings, the cartilaginous Ends of the Bones being absorbed, the Bones are removed together with the Cartilage.

Mr. Bromfield amputated the Arm of a young Woman at the Shoulder Joint; she recovered. Several Years after she came into St. George's Hospital, where she died: In dissecting the Shoulder on which the Operation had been performed it appeared that the Granulations & soft Parts were not the least adherent to the subjacent Cartilage which they covered loosely like a Purse. The same Thing happens when Fingers are amputated at Joints. Mr. Hunter has seen the Cartilage of the Larynx & Ribs exfoliate, but they have been previously ossified, & become a bony spongy Substance.

630. When the permanent Cartilages are divided the Reunion is formed by Cartilage, but when the changeable Cartilages undergo a Solution of Continuity, they are consolidated by a bony Union.

631. When the changeable Cartilages inflame they take on the ossific Disposition; when they ossi

into Disease, they also become bony.

682. Cartilages seldom admit of the ulcerative Process; they are, however, liable to undergo contiguous Absorption from the Lymphatics of the surrounding Parts.

683. Joints — If we judge of them by the Laws of Mechanics, they are in general very ill formed; but this Deviation from mechanical Principles fits them for a Variety of Actions, which had the Rules of Mechanics been strictly adhered to would have required a greater Number of additional Joints.

684. In considering the Structure & Properties of Joints, we are also to take into Account, the Ligaments & Muscles.

685. The Ligaments in general serve as Pivots.

686. The Ligaments of some Joints regulate the Motion of the Joint, but these are only such as are moved in one Direction only, as the two upper Joints of each Finger; others only serve to sustain & to support.

687. The Powers that give Force & Firmness & direct the Actions of the Joints are the Muscles; the Muscles support the Joints in the Motions they have to perform.

¶ The lower Jaw seems an Exception to this; the Depressors are always attempting to dislocate the Jaw, but the Elevators keep~~ing~~ it firm in its Socket; opening the Mouth does not give

Firmness in the Joint: we see in immoderate yawning the Jaw will be sometimes dislocated, the Elevators here either for a Time losing the Power of Action or being overcome by the Power of the Depressors: the latter are not inserted near the Centre of Motion.

688. From knowing that the Strength & Weakness of a Joint depends in a great Measure on its Muscles, we are enabled to account for several Circumstances otherwise inexplicable.

689. Joints are capable of Motion either passive or active; by the former we mean Motion given to a Joint by external Force, by the latter that Motion derived solely from its proper Muscles.

§. 688. 689. These Aphorisms require considerable Attention, it is observed (48) that the voluntary Motions may occasionally act of themselves & independant of the Will, & this may be either from Disease as from Spasms, or from a kind of Consciousness in themselves of the Necessity of acting. When a Man is descending from an Eminence as when he is coming down Stairs, the Muscles are so prepared to receive the Joints of the Knee Ankle &c so as to prevent their giving Way, and of course, being strained, or any jarring between the Bones that compose them & this without any Direction from the Will, but seemingly from a kind of Attention in the Muscles to the Security of the Joints; but if a Man in walking along a Plane suddenly steps down a Descent which he is not aware of, the Muscles being unprepared for the Exertion & off their Guard do not give Firmness to the Joint, & in this sudden Action a jarring & Strain of the Parts composing the Joints take Place, hence why Strains so often accompany Falls. When a Man falls from an Eminence, it being uncertain what Part shall immediately receive the Shock, no particular Set of Muscles can prepare themselves to support a Joint against Injury.

We gain much Information on this Subject by considering the Cooperation of Muscles; this will enable us to learn why a Man shall jump from a considerable Eminence to the Ground without Injury & yet from a slight Fall shall violently strain the Parts subservient to some of the Joints of his Body; If we but eagerly *clench* our Fist, we find not only the Muscles of the Hand in Action, but a Degree of Rigidity pervades the whole Body, the general System of the Muscles cooperating so as to give additional Strength to the primary ones, or those immediately concerned in the Action of the Hand; this is a *familiar* Instance of the Cooperation of Muscles; so when a Man is about to jump from an Eminence, not only the Muscles of the Legs prepare themselves to give Firmness to the Joint & resist Violence, but all the Muscles of the Body exert themselves likewise to give general Firmness & by their general Cooperation to assist the Muscles of the Leg in overcoming the Violence of the Jar. If we cautiously raise an Animal, as a Cat, upward, the Body being elevated its Muscles are relaxed but the Moment we let the Body sink towards the Earth the whole muscular System becomes in Action, & a Degree of Rigidity is sensible throughout its Body: the same holds good with a Child, if in playing with an Infant, though ever so young, we toss its Body towards the Heavens, its Muscles while it is going upwards remain lax & at rest, but as it descends towards the Earth they all become rigid & firm, prepared, as we may say, to resist the Shock of Violence.

If a Man intentionally jumps from a considerable Eminence to the Ground, as from an House Top, his Knees or Ancle Joints are injured, because the Power of the Muscles, though prepared to resist Violence & give Firmness to the Joints is less than the Force with which he comes to the Ground, & the greater Force overcomes the Lesser.

If a Man jump out of a Carriage in quick Motion, he generally injures his Knee or Ancle Joints, for the same Cause, for although he does not in this Case jump from any great Height, yet the projectile Force of the Carriage, out of which he is thrown as a Stone from a Sling, added to the Weight of his own Body, combine to give a greater Shock than the resisting Power of the Muscles can support. In these Cases, the Degree of Violence forcing the Joint to passive Motion, & that perhaps in an unnatural Direction, is superior to the Power of the Muscles to give Firmness & Resistance to the Joint.

690. Strains always arise from a Weakness of the Muscles in Question, or to an Inattention in them to the Task they have to execute, being then taken by Surprize.

691. If the Force of passive Motion given to a Joint be greater than the Power in the Muscles to give Firmness to that Joint, then a Strain or some other Injury in the Joint will ensue, (687. 689.)

692. The Muscles themselves as well as the Joint suffer from Strains, & this from the same Causes, being obliged to act unprepared, or being obliged to resist a Force superior to their Power.

693. Dislocations arise from the same Causes as Strains, & it is not impossible but Fractures of Bones may also be produced by them.

694. Crookedness of the Spine may also originate in a Deficiency of muscular Power, the Muscles of the Back not being able to sustain

the Trunk in its erect Posture.

695. The same Cause likewise, probably, gives Occasion to knocked Knees, we rarely see very muscular People fall into this State.

696. The Power of the Muscles in preserving Joints being overcome by the Violence of external Force applied, the Joint gives Way to this Violence as far as its Ligaments will allow; these are stretched to that Side to which the Joint bends, & these Ligaments are not unusually torn.

697. The Joint being thus injured the following Circumstances may arise

1st. Tumefaction of the Joint & this almost instantaneously.

2d. Ecchymosis.

3d. Heavy dull Pain in the Part/ /

4th. Sickness/ /

698. The Tumefaction arises from an increased Secretion of the Synovia, added to the other common Causes of Tumefaction from external Injuries.

699. The Parts which are the Seat of Pain, though in their natural State insensible ~~[illegible]~~, now acquire great Sensibility; this Sensibility leads to a natural Cure by incapacitating the Patient for Motion, & so necessitating him to remain in a State of Rest.

700. In the Treatment of Strains & Injuries of the ligamentous Parts of Joints, the Indications

are

1. Rest

2.d Topical bleeding, as by Leeches.

3.d The application of cold Water, Vinegar, Spirit of Wine &c or Fomentations.

701. But the Powers of Restoration here being weak, the Cure will in general be tedious & too often imperfect, the Joint sometimes never recovering its original Health.

9. When Joints after an Injury recover their Health it is probably the Ligaments were injured & not the Cartilages.

702. The common Causes of Strains (690) will be also the Causes of Dislocations.

9. If Dislocations be not easily reduced the Parts receiving the dislocated Bone adapt themselves to it.

703. When a Bone is dislocated, its End is thrown beyond the articular Surface of the Bone, with which it was naturally conjoined.

4. In speaking of Dislocations we say the Bone farthest from the Trunk is dislocated; thus when there is a Dislocation at the Elbow Joint, we say the Ulna is dislocated not the Humerus.

704 The Bone being thus displaced, the Action of the Muscles inserted into it draws it upwards, so that the Limb, if one of the Extremities be concerned, ap-

pears generally shorter than its Fellow, & if suffered to remain long so, the Reduction is frequently impossible.

705. In attempting the Reduction of a dislocated Bone, the Indications are

1.st To make the naturally most immoveable Part a fixed Point.

2.d To overcome the Action of the Muscles which draw up the dislocated Bone, & resist its recovering its natural Situation.

3.d Then by making lateral Pressure to force the Head of the dislocated Bone into its proper Place.

f. Here then a retrograde Motion is to be observed, & the last Occurring in the Dislocation is the first to be overcome; the last Action is that of the Muscles drawing up the dislocated Bone & eir Force being overcome by Extension in a per Direction, & by it the Head of the Bone ing brought into the Edge of its receiving articular Surface, is then by lateral Pressure to be forced into its Place. The Humerus is the Bone that is most frequently displaced, & its Reduction is rendered difficult, among other Causes, by the Scapula being a moveable Bone; & it is of e last Consequence sometimes to make the Scapula steadily fixed; a great Variety of Situation & a great Degree of Mobility are incompatiare with great Strength; this is a Cause why Dislocations of the Humerus so frequently occur; how far the Ligaments are Lacerated in Dislocations is not yet ascertained.

705. If a dislocated Bone remain in its unnatural State a considerable Time, & in Contact with a bony Surface, by Degrees it forms to itself a new Socket; the Bone against which it presses undergoes Absorption & the adhesive Inflammation arising in the Parts around, a new Joint is formed; these may be called adventitious Joints.

Q. This happens most commonly in irreducible Dislocations of the Thigh Bone; for its Head comes in contact with the Os Ilium: this may also take Place in certain Dislocations of the Humerus, when its Head happens to be placed against the Scapula; these adventitious Joints are very similar to Fractures not uniting, (616)

707. Joints are more subject to fall into a diseased Habit than any of the other circumscribed Cavities, & this from the Nature of the Materials of which they are composed: some Joints are more frequently the Subjects of Disease than others, from being more exposed to Injury, as the Knee.

708. Joints are subject to the adhesive, suppurative & ulcerative Inflammations & to specific Diseases as Scrophula.

Q. When a Joint inflames it swells & becomes extremely painful; Inflammation of a Joint always requires great Attention; Inflammation arising spontaneously is in general more dangerous than Inflammation produced by external Injuries.

709. Scrofula may be brought into Action in Joints having a Disposition to it, by an external Violence

710. The adhesive Inflammation is not carried to the same Extent in Cavities of Joints as in other circumscribed Cavities, because Adhesions being produced would render a Joint useless, but the Inflammation runs into Suppuration or the Inflammation becomes of the scrophulous kind.

711. Inflammation of Joints whether arising spontaneously or from Violence, requires Rest, topical bleeding, sometimes bleeding & general antiphlogistic Treatment; but as soon as the Disease becomes stationary it is to be considered as falling into a scrophulous State, & the Treatment of Scrophula must be had Recourse to.

712. If a Joint takes on Suppuration, every Point of its Cavity falls into it. Abscesses in the Joints should always be prevented if possible, as they are productive of the greatest Evils.

713. The suppuration here rarely goes on kindly, tis a Mixture of the adhesive & suppurative Inflammations; the Parts want Power to carry on readily any Process; even Ulceration goes on

[illegible] slowly (& a considerable Time is taken up in bringing the Matter to the Skin).

714. The Ends of the Bone here forming a Joint become ulcerated, indeed the Bones seem to accept of the Ulcerative Absorption more readily than the other Parts employed in forming the Joint.

715. From the Backwardness or Inability of the Parts to commence the Process of Restoration, & the Constitution being long teazed with an incurable local Disease, Hectic / / is produced & the Patient is destroyed, unless saved by Amputation which in general it is best to perform early.

716. Diseases of the Joints more readily produce Hectic than Diseases of the Bones in which the Joints are not affected: should Circumstances more kindly arise & the Suppuration & Ulceration go on quickly, it may happen that Granulations may arise & a Cure be obtained without the Loss of the Limb & only with Abolition of the Motion of the Joint.

717. When Motion is lost in a Joint, Anchylosis is said to have taken Place.

718. Anchylosis is produced by two Causes.

1st By an Immobility of the Bones, produced by a Change in the soft Parts, forming or surrounding the Parts.

2d By an immediate Union between the Bones themselves.

719 Anchyloses are of five kinds.

1st Lateral Anchylosis.

E. As between two Ribs, this is seldom inconvenient but may if it take Place between the Radius & the Ulna, hindering the Pronation or Supination of the Hand: it happens when two Bones are within the Reach of specific Inflammation arising in either of them.

2d Surrounding Parts becoming Bone.

3d The capsular Ligaments of Joints taking on the specific Inflammation & becoming bony.

4th Granulations arising from the soft Parts in a Joints & afterwards becoming Bone.

5th The Ends of Bones forming a Joint becoming ulcerated, & Granulations taking Place, these Granulations uniting becoming bony, & in Fact forming the two Bones into one.

E. These circumstances are similar to a fractured Bone being united by Granulation, as in a compound Fracture.

720. When in Consequence of preceding Inflammation or any other Cause, a Stiffness & partial Loss of Motion in a Joint take Place, the Joint preserving its original Structure, or at least with little Variation, we can restore its Use by giving it a passive Motion, frequently repeating it, as is used after Fractures of Bones communicating with Joints, 698.

721. The Powers of Flexion are more easily restored to a Limb than the Powers of Extension.

722. When Joints communicate or are in Contact with each other as those of the Tarsus & Carpus, Suppuration beginning in one Joint will generally extend itself throughout the whole & all of them will equally fall into Disease.

723. A loose cartelaginous or bony Substance is sometimes found in the Cavity of the Knee Joint; this may be formed in the following Manner, some Blood being extravasated into the Cavity of a Joint may become organized, & at length cartilaginous or bony; not being an original formed Part, it may in the Motions of the Knee be broken off from the Part in which it has been formed & thus become loose in the Cavity of the Joint.

Gun Shot Wounds.

724. Gunshot Wounds are to be considered in general as Wounds accompanied with Contusion, they are followed by the same Effects, and require the same Mode of Treatment.

725. These Wounds being made by a projectile Body driven with Violence against the Part, the Extent & Degree of the Injury will be in Proportion to the Magnitude of the projectile Body & the Velocity with which it is driven against the Part.

726. The Danger of Gunshot Wounds is to be estimated according to the Nature of the Part or

Part is injured & the Degree & Extent, the Part injured.

727. Many Circumstances will depend upon the Degree of Velocity with which the projectile Body is driven against a Part, as

1st The greater the Velocity of the projectile Body, as a Ball, the more the Wound will be made in a straight Line.

2d The greater the Velocity of the Ball, the more the Wound will approach to the Nature of an incised Wound.

3. The greater the Velocity of the Ball, the greater will be the Danger of Hemorrhage.

4th The Velocity of the Ball will decrease in inverse Proportion to the Obstruction given to it.

728. Gun shot Wounds, as all other contused Wounds, are attended in general with less Hemorrhage than Wounds from Incision & Gun shot Wounds in general are slow in taking on Inflammation.

729. These Wounds being attended with a Destruction of the Life of several Parts cannot heal by the first or second Intention; the dead Parts must slough & be thrown off, so that the Process of Suppuration is necessary.

730. The Slough will be larger where the Ball enters than where it goes out.

731. We divide Gunshot Wounds into simple & com-

pound.

732. By simple we mean where the Ball passes into or through soft Parts only as Muscles & Integuments, & which are not attended with the Effects enumerated in the following Aphorism.

733. The compound we divide into
1st Those in which a Bone is fractured.
2d Those attended with the Division of some large Artery.
3d Those penetrating some Cavity.

734. The penetrating Wounds, (733. 3d) are either
a Simple penetrating, or
b Those also wounding some contained Viscus.

735. When a Ball passes through a Part, the most depending Orifice will heal sooner than the superior one.

736. The healing of Gunshot Wounds is always more slowly performed than the healing of incised Wounds.

737. The Degree of Mischief done by Gun shot Wounds is not always to be ascertained early, because Parts may suffer Violence without any Proof, the Kind of Injury not appearing untill some Time after the Accident. for

738. An Artery may be so injured that a Portion of it shall become dead; yet the Separation of the dead Portion shall not take Place at the Time of the Accident, but some Time afterwards, so that

though some Hemorrhage ~~may~~ happens when & the Injury is received, yet a violent one may come on when the dead Portion of the Artery sloughs away. or

739. a Ball penetrating the Abdominal Cavity, may bruise even to Death a Portion of some Gut, yet the Canal shall for the present remain entire, nor the Exit of Faeces through its Sides take Place, untill the Separation of the dead from the living Part is effected.

740. Dilatation of Gunshot Wounds is not in general necessary, & therefore not to be practised: however the same Indications which require the Dilatations of other contused Wounds, may also direct us to enlarge these.

741. Dilatation of the Wound or even a Removal of a Portion of the soft Parts may be necessary when a Ball or other foreign Substance presses upon any vital Part, a large Artery, or a Nerve; likewise in Case a large Artery is wounded and can be taken up; also when a Part is dislocated & can be restored by dilating: in all these Cases it is right to enlarge the Wound.

¶. As when a Ball, Bone or extravasated Fluid presses upon the Brain, we may remove a Portion of the Scalp to prepare for the Trephine; or when the Intestines come through the Wound & cannot be returned without dilating it.

742. When a Ball is lodged in a Part where its Continuance may be the Cause of Danger, if we can extract it, it is right to make a Dilatation.

743. It is wrong to dilate merely because a Ball is lodged in a fleshy Part, or with a View to extract a Ball where the circumstances similar to those in 742 do not require the Dilatation of the Wound.

¶. Balls we know often remain in Parts for Years without producing any Inconvenience and sometimes they are never found; with Regard then simply to the Ball being lodged in the Body, the Surgeon need be under but little Concern, he has only to take into Consideration the other Circumstances present, as the Seat of the Ball, the Nature of the Part injured &c

744 In simple Gunshot Wounds, no Advantage is gained by their Dilatation, for the Wound made by the Knife of the Surgeon will heal much sooner than the Wound made by the Ball, so that dilating will not alter the Nature of the Wound, or hasten the Cure.

745. Moreover, if an extraneous Body as a Ball Splinter of a Bone &c is to be thrown off, the Wound though dilated or treated in any other Manner will not heal untill the foreign Matter is thrown off; so that all Attempts to

wards a Cure must be finally until that has taken Place; the Wound will heal so as to leave a small Hole only open which will remain unhealed until all the extraneous Matters which are to be thrown off, are come away.

Four Frenchmen were badly wounded by Gun Shots at Bel Isle, two were shot through the Breast, one through the Elbow & one through the Deltoid Muscle, Scapula &c; all the Patients did well without Dilatation of their Wounds. If the Surgeon makes a Dilatation the Consequence is that the Cure will remain unaccomplished equally as long as if Nothing had been done: the superficial Parts will heal to a very small Hole & the deep seated ones remain open; so that a Fistula will remain incurable until all the dead or foreign Matter is come away, as Exfoliation of Bone &c. Again in Gunshot Wounds, where the Ball cannot be followed, as where it has entered the Bones of the Face, Dilatation must be evidently useless. A Reason given for Dilatation has been the preventing or taking off Inflammation and Tension, but has not the Incision made in dilating a Tendency rather to induce these Affections?

746. In examining Gunshot Wounds, the Probe

should never be used where the Finger can be admitted, & the Forceps &c is never to be introduced but when the Ball &c is within our Reach.

747. If a Ball pass some Way under the Skin, & again passes out at a considerable Distance, an Opening should be made midway between the two Orifices to prevent the Formation of an Absc:

748. If a Ball pass through & through immediately under the Skin, the Orifices not being far asunder, it might be right to open the sinuous Wound it has made through its whole Length, for the Skin does not so readily unite with the Parts underneath, as muscular Parts do with each other.

749. If a Ball be lodged under the Skin & can be felt & the Integuments are bruised & likely to slough away, it may be right to incise the Skin & extract it, for the Mischief will not be increased by taking it out & it will be giving Satisfaction to the Patient's Mind.

750. If the Skin appears quite sound & free from Inflammation or Disposition to slough, the immediate Extraction of the Ball is by no Means necessary.

751 The Course of the Ball will be ever extremely irregular; it will vary from the perpendicular or horizontal Direction to oblique or tortuous, & sometimes its Course will make

a considerable Section of a Circle.

Of Balls that do not go through & through are generally spent Balls unless it happens that a Ball strikes against a Bone. A Ball shall sometimes enter the Breast obliquely, & afterwards go almost round the whole Body, if it be directed by a Rib untill it pierces the skin & makes its Way outwards; the Course of some Balls is really surprizing. Mr. Hunter has seen a Ball enter on one Side of the Shin Bone, go across it & raise up the Skin from the Periosteum & make its Exit on the opposite Side, without doing any Injury to the ~~[illegible]~~ Bone; now had the Ball struck the part with great Force it must have gone directly across the Bone & carried away a portion of it. A Soldier had a Ball enter the Biceps Muscle of the Arm & pass out under the Scapula, close to the Spine.

772. A red Line appearing on the Skin, will in general mark the Course of the Ball.

It is difficult to say on what this red Line depends, it seems to be neither the Effect of Inflammation nor of Extravasation.

772. It is unnecessary to dilate a Wound penetrating a Cavity as the Abdomen or Thorax, unless some other Object requires the Attention

of the Surgeon, than the simple Penetration of the Cavity.

754. Compound Gunshot Wounds in which an Artery is divided or a Bone fractured, as there is nothing specific in their Nature, so the general Principles of Surgery will apply to their Treatment.

755. Penetrating Wounds, 733-3d, are divided into

a Simply penetrating Wounds.

b Wounds penetrating some contained Viscus.

The containing Cavities will be the Abdomen the Thorax & the Cranium.

756. Wounds simply penetrating the Abdomen will in general do well, provided the first or second Mode of Union takes Place, so as to exclude the Stimulus of Imperfection from giving a general Alarm to the whole Cavity.

757. Compound penetrating Wounds of the Abdomen will again divide themselves into two Kinds.

1st Those which penetrate some containing Viscus, as the Stomach, small Intestines, large Intestines, Bladder &c

2d Those which penetrate some non containing Viscus, as the Liver, Spleen &c.

758. The compound penetrating Wounds, 757-1st will have different Symptoms according to the Part receiving the Injury

759. The Symptoms of wounded Viscera will be either

1st Immediate or

2d Secondary

By the first are meant such Symptoms as arise immediately from the Injury done to the Viscus.

By the second those which arise from the consequences of that Injury & not from the Injury itself.

The immediate Symptoms of wounded Stomach will be Sickness, vomiting, great Depression of Mind &c.

Wounded Intestines — bloody Stools.

Liver — Pain in the right or left Shoulder, according as the right or left Lobe of the Liver is wounded; Discharge of the Blood by Stool — Kidneys or Bladder, bloody Urine. Where the Ball if it remain unextracted may become a Nucleus for a future Stone. Wound of the Spleen will give no particular Symptoms but is in general followed by a profuse Extravasation of Blood into the Cavity of the Abdomen.

In general Wounds of the Liver & Spleen will have none but immediate Symptoms.

A young Gentleman received two or three stabs in his Abdomen, one of which went through his Body entering before & coming out near the Spine; his Stools were natural upon which Mr Hunter pronounced his Bowels unhurt; his Urine was bloody which d as Kidneys or Bladder to be wounded, be recovered.

01. It will, however, be very different in Wounds containing Viscera, or those which naturally contain Quantities of foreign or secreted Matter, as the Stomach, the intestinal Canal being wounded a considerable Time may be elapsed before the Separation of a Slough gives an Opportunity for the Faeces to escape, these getting into the common Cavity of the Abdomen at what Distance of Time soever from the Injury will become the Cause of general Inflammation of the whole Cavity with all its Consequences, as Suppuration, Gangrene & Death: a Wound of the Gall Bladder, Ductus cholidicus, Pancreaticus or urinary Bladder, if communicating with the common Cavity of the Abdomen may produce the same Effects though probably more slowly.

702. In general Wounds of the containing Viscera soon destroy the Patient, but it sometimes happens that previous to the Appearance of any secondary Symptoms, Adhesions shall take Place between the Wound in the Intestines & the Wound in the Peritoneum, and common Integuments, so that when the Slough comes away the Faeces will escape not into the Cavity of the Abdomen, but through the artificial Canal formed by the adhesive

Inflammation of which as an artificial Anus or Urethra, will give an Exit to the Substances to be evacuated; when this Circumstance takes Place no other ill Symptoms forbidding us, we may form a favourable Prognostic.

N.B. A Gentleman in a Duel had a Ball passed through his Belly; he had no particular ill Symptoms for thirteen Days, on the 14th. Faeces came through the Wound, Nothing further indicating Mischief, Mr Hunter pronounced him out of Danger, forming his Prognosis on the Principles laid down in the Text.

763. The Time which may elapse before the secondary Symptoms appear, may be ten, twelve or fourteen Days, 752.

764. The artificial Anus, 762, will sometimes close & heal up.

765. Wounds simply penetrating the Cavity of the Thorax, will be only so far dangerous, as they may produce Exposure of the Thoracic Cavity. If the first or second Stage of Union take Place before the Chasm is given to the Cavity, no Mischief arises.

766. Wounds of the Lungs are not always fatal; those made by a Shot are less frequently destructive than those made by a sharp Instrument, as a Sword or Bayonet, &c

767. One great Cause of the Mortality of Wounds in the Lungs, being excessive Hemorrhage into the cavity of the Thorax, the Hemorrhage following a gun shot wound, will be much less than that produced by a cutting Instrument.

768. Symptoms of a wounded Lung would be bleeding from the Larynx, Cough, Pain in the Side, fainting, Difficulty of breathing, Diminution Motion in the Muscles of the Thorax, because he Muscles of one Side cannot act without those f the other Side acting likewise.

769. The Wound being in a vital Part, the ulse will grow hard.

770. The Patient will not lie in a horizontal Position, but is desirous of sitting erect, that his Diaphragm may be as fully expanded as possible.

771. A profuse Extravasation of Blood in the horacic Cavity may be judged of, from the sense f weight complained of by the Patient, from he Lowness & Faintness which must attend sudden & copious Evacuation from the Lungs, & the common Symptoms of a sudden accumulation of Fluid in the Thorax, &c.

772. A Gunshot Wound penetrating the Lungs, the wounded Lung commonly collapses, & therefore Adhesion of the wounded Part to the Pleura

cannot take Place.

173. Gunshot Wounds not healing without Suppuration, Room must be left for the Matter which may be collected in the Chest, to drain it; but this will be attended with the Inconvenience of making the Thorax an exposed & imperfect Cavity. If the Quantity of Blood extravasated be small, it may be absorbed; but if there be Symptoms of a large Quantity being collected in that Cavity, the Operation for the Empyema should be performed as early as possible, because if the Blood coagulate it will adhere to the Sides of the Cavity, & not be got out without the greatest Difficulty; or in some Cases it may suffice or be best to enlarge the original Wound.

Penetrating Wounds of the Cavity of the Head will be considered among the Diseases of the Encep. Lecture 178.

174. Gunshot Wounds may so far injure a Part, that the Process of Restoration cannot take Place in it, & therefore the Wound is rendered incurable: in this Case the Removal of the Part becomes necessary. & when a Part, as an upper or lower Limb, has been so injured that its Removal is necessary, we must determine in what Cases Amputation should be immediately performed, & in what it may be deferred to some future Period.

* Sir James Poulteney — Bullard late Keeper of Bodl
May 19 · 1815

775. Should a Part, as an Arm or Lower Extremity, be so nearly separated from the Body as only to hang by a small Portion of soft Parts, it may be immediately removed.

776. Should a Hemorrhage from some Vessel which cannot be restrained, endanger the Life of the Patient, Amputation of the Limb should be immediately performed.

777. But in most other Cases it is advisable to defer the Amputation untill the Inflammation is gone off.

778. If a Cavity be wounded & some of the contained Viscera protruded, they should be immediately replaced.

779. Bleeding is not indiscriminately to be had Recourse to in Gunshot Wounds.

780. We are always to be directed in our Opinion respecting this Evacuation, by the Nature & Situation of the Part injured, & its Powers of Action, & the general Strength of the Patient in Proportion to the general Action of the Vessels.

781. Excessive bleedings having been employed Patients have sunk suddenly. *

782. The Use of the Bark becomes highly proper after Inflammation has subsided, and even during the Presence of Inflammation if attended with Weakness of the System it

is, however, necessary sometimes to accompany its Use with small bleedings.

783. After the Sloughs occasioned by Gunshot Wounds, have been thrown off, though the Ball or other extraneous Matter remain in the Body, the Ulcer will granulate & continue to heal, so long as the extraneous Matter remains quiet & does not stimulate.

784. When an extraneous Body remains unremoved, the Ulcer may become fistulous, or a Fistula may even be formed when the foreign Body has been extracted, in which Case it is to be treated as another Fistula.

785. Tents are, however, always improper.

786. Diseases of the Brain are of two Kinds.
 a Where the Imagination is affected from various Causes as from Mania &c
 b From mechanical Injuries.

787. Mechanical Injuries may be either.
1st Concussion.
2d Compression.
3d Wound or Loss of Substance
4th Wound Compression.

788. The three first may exist separately, or any two or all three together, their Symptoms will be nearly similar; those are a Cessation of Sensation & voluntary Action, the Muscles

of the Mouth & Throat becoming flaccid, Froth being discharged from the Mouth, with the appearance of Fullneſs of the Veſsels; the Symptoms of the fourth will be Restleſsneſs & Insensibility.

789 Vomiting accompanies all these Affections of the Brain & arises from Sympathy.

790. Vomiting however, never takes Place during the Time of perfect Insensibility.

791. Injuries done to the Brain diminish Sensibility: Injuries of other Parts increase it to a certain Degree.

792. Concuſsion may depend upon a Displacement of Parts of the Brain; the Degree of Concuſsion will be in Proportion to the Violence with which the Blow is given, whether the Head falls against any hard Body, or any hard Body is driven against the Head

793. Compreſsion may follow accidental Violence immediately, or arise some Time after.

794 Compreſsions may be owing to any of the following Causes, viz

1st To a Depreſsion of the Skull from Fracture.
2d To Preſsure of some Part of the Cranium, from the Thickening of a diseased Bone.
3d To Water in the Ventricles.
4th To Distension of the Blood Veſsels.

5th. To Inflammation.

6th. To the Formation of Pus.

7th. To Extravasation of Blood.

8th. To a Tumor in the Substance of the Brain itself.

The Causes of Wounds, a Loſs of Substance in the Brain must be sufficiently obvious.

795. Concuſsion will be either

a Simple

b Compounded immediately, or

c Compounded simply.

796. Simple Concuſsion is where there is no Fracture, Compreſsion or Extravasation; we must endeavour to distinguish between Concuſsion & the Effects of Intoxication. The Effects of simple Concuſsion will soon be carried off by plentiful Bleeding &c but if it be complicated with Compreſsion the Effects will not be diminished by Time, but rather increased, Compreſsion may instantaneously follow Concuſsion, in which Case it is said to be compounded immediately, or Compreſsion may arise when the Effects of Concuſsion would be naturally going off in which Case it is said to be compounded secondarily.

797. Fractures of the Skull may always be considered as compound Fractures, they are either made so intentionally by the Surgeon, or are

found by him in that State.

798. Fractures of the Skull are of three kinds viz.

1. Fracture of the outer Plate.

2. Fissure.

3. Bone broken in several Places.

These may be complicated with each other.

799 The first & second, (798) may be the remote Cause of Compression (793) & the third may in itself become the immediate Cause of Pressure on the Brain.

800. Bleeding from the Nostrils or Ears is a common though an equivocal Symptom of a Fracture of the Cranium.

801. The Concussion will in general be less where the Bone is much shattered than when otherwise for the Force being spent upon the Skull, no Shock is given to the Brain.

802. Gun shot Wounds of the Head, & those made by other Bodies moving with great Velocity, do not produce for the most Part great Concussion.

803. Fissures of the Skull will run in very different Directions along the Cranium, accept it, & even across the Sutures

804. If the Skull be soft & yielding, there will often be Depression of the Bone without Fracture.

805. When there are Fracture & Depression of both tables, if the Fracture detach an entire Piece of Bone from the undepressed Cranium, & that whole

Piece be driven downwards than the Fracture of the internal Table will always be larger than that of the external.

306 If the fractured Bone be depressed on one Edge only, through both Tables, the inner Table will still go sideways beyond the outer.

307. Hence will appear the Difficulty of elevating depressed Pieces of Bone so as to make the separated Portions fit themselves to the undepressed Cranium perfectly smooth; hence also the Utility when a Portion of Bone is to be removed, to make the Margin of the depressed Piece a Part of it.

308. The Indication in all Fractures of the Skull is to prevent or remove Pressure on a vital Part, that is, the Encephalon, therefore it is necessary henever there is a Fracture with Depression, hen a Piece is detached & driven in, to remove it entirely or if one Edge only is depressed, take Care to elevate it properly: the Operation employed for the Purpose of elevating or removing depressed Bone, or for making an Opening for any necessary Purpose into the Cranium is called trepanning, & the Instrument used by urgeons for that End is called the Trephine.

309. When a Fracture is discovered, it should in general be traced as far as possible throughout its Extent, & therefore we are sometimes obliged to remove the Scalp freely.

80. Fractures of the Skull are so often complicated with the immediate or secondary Symptoms of injured Brain that few Cases will offer in which the Trephine will not be necessary.

81. It is never necessary to apply the Trephine either in Fissure or Fracture of the outer Table only unless there are also Symptoms of an injured Brain, & those not of simple Concussion alone.

82. In all Cases of Compression, either immediate or secondary, of Concussion complicated with Compression & in all Wounds of the Brain it is necessary to apply the Trephine.

83. It may be sometimes impossible to ascertain the exact Situation of the compressing Matter, yet here, as the Patient must undoubtedly die if not relieved, it is justifiable to operate at Random

84. The Situation of extravasated Fluid will sometimes be opposite to the Part where the Blow was received.

9. The Situation of the extravasated Fluid will be very different in different Cases & hence the great Uncertainty of our relieving the Patient who labors under Depression from some Cause independent of depressed Bone, it may be between the Dura Mater & the Skull, between the Dura & the Pia Mater, between the Pia Mater & the Brain, or it may be in the Ventricles

Lesion in the Substance of the Brain itself.

815. The Dura Mater should never be divided, unless from the greatest & most evident Necessity as when Matter or Blood is visibly lodged beneath it; for penetrating Wounds of the Dura Mater, which exposes & renders imperfect a Cavity containing the Brain, will in general be mortal.

§. Mr. Hunter computes that not more than one in twenty Persons in Health, would recover from a penetrating Wound of the Dura Mater.

816. The Trephine must be applied, once, twice, or as many Times as the Extent of the Injury shall require.

17. The Trephine may be applied in any Part of the Arch of the Cranium, where an Accident may render it necessary or eligible; if the Fracture be circular, it will be right to repeat the Application of the Trephine, untill it is surrounded with the Perforations.

818. As Life consists in the Properties of Preservation & Action, so Death is the Loss of both.

819. The immediate Cause of Death in a Part would appear in most Cases to arise from a total Loss of Circulation, but this must be the Effect of some remote Cause.

§. In Health we know the Strength is always greater than the Action.

820. Mortification in a Part differs much from

common universal Death; in the latter Case the Vessels can be injected, & the Structure of the Parts examined; but this is not the Case with the former, its Vessels cannot be injected, its Structure is changed, is destroyed.

821. The immediate Cause of Mortification will be whatever can excite the Actions of a Part so as to render them superior to its Strength, or reduce the Strength of a Part so as to be unequal to its Actions.

822. Debility can be only the predisposing Cause of Mortification, it cannot immediately produce it; if a Part be ever so weak, while its Actions do not exceed its Strength, it will retain Life.

823. From 813 it is evident that a Part may fall into Mortification either with or without previous Inflammation, in the former Cause the Inflammation is the immediate Cause of Death.

824. Heat should always be in Proportion to the living Principle, otherwise it produces a Necessity of Exertion, which the Strength of the Part is not equal to; the exciting of Heat then in a Part, whose Powers are very weak may induce Mortification.

¶. The greater the Distance from the Heart, the more liable are Parts to a Mortification.

825. When Parts are extremely weakened as to their Principle of Life, by old, as when People

are Frost bitten, the Application of Heat must be gradual & slow, otherwise it will necessarily induce Mortification, & as the Principle of Life increases the Heat may be increased.

826. From 819, we are enabled to discover why Scarifications in the Legs of anasarcous Persons, or Wounds made in their Extremities, either by Art or Accident, & why Blisters applied to Persons in whose Systems there is great Debility & a Disposition to Putrefaction should be followed by Mortification.

827. Also why Persons who have suffered severe Famine, & long Exposure to intense Cold, are in an extreme old Age, or have the Circulation obstructed in a Part, or those of tall Stature, are subject to Mortification, especially of the Feet & Toes.

828. In the Cure of Mortification, or restoring Parts falling into Mortification, it must be evident that as the Cause is a Diminution of Powers in Proportion to the Actions of a Part, whether common or increased, so the Cure must consist in lessening the Actions & in increasing the Powers of the Part.

829. Whatever then stimulates a Part to Action without increasing its Strength & Power must be contraindicated.

830. Hence also it is evident why Bark should have so much Power in checking some Inflamma

tions, & that Opium may prove a very useful Remedy.

9. The Temperature of the Atmosphere in which Patients to be cured of Mortifications are best placed, should be neither very hot nor very cold, that the natural Actions may neither be impeded, nor hurried on too fast.

831. The Causes (819) will be either

a - Mechanical, as a Blow - or

b Chemical, as a Caustic.

832 The less vascular a Part is the more readily its Life is destroyed.

833. Also, the weaker the Powers of Life in a Part are, the more easily will they be acted upon by Caustics.

834. No Substance can act chemically but in Solution; in Order for the Caustic to act chemically it must be moistened, this is effected by the Serum produced from the Vesication which arises from the Irritation caused by the application of the Caustic Substance, which Serum moistens the Substance, & thus after the Life of the Part is unable to act for its Preservation, operates chemically on the Skin &c.

835 The Action of a Caustic when applied to a Part, produces an Abolition of its Life, & then the Caustic acts chemically upon its Substance, co-

agulating its mucilaginous Parts & changing its Texture.

836. Mortification or the Death of a Part is often induced with a View to destroy a diseased, or even a sound Part, in Order to enable us to make Application to some diseased Part otherwise out of our Reach, or to give an Exit to some foreign Substance retained under the Skin, as Pus &c —

837. The Effects (834 &c) will be produced by a Variety of Substances artificially & intentionally applied; of those the principal are

Caustic Alkalis
Concentrated Acids — and
Metallic Salts.

838. Of the metallic Salts, Arsenic is the most powerful, whose Action is different in some Measure from that of the other Caustics, as it produces Mortification simply by its exciting violent Actions in Parts which they cannot support, & not by any chemical Process.

839. The Application of those Substances to irritant Parts is attended with violent Pain, that is to be diminished

1st By the Administration of Opium by the Stomach.
2d. By mixing Opium with the Substance to be applied
3d. By applying Plaisters of Opium to the Part

for some Hours previous to the Application of the Caustic.

840. The natural Sequel of a Mortification is the sloughing of the mortified Part, or the Process by which it is thrown off from the living Parts.

841. To this Process the suppurative Inflammation of the living Parts immediately in Contact with the dead & the ulcerative Absorption of them is necessary (449).

842. As in the Exfoliation of Bones, so in the sloughing of the soft Parts, the Absorption begins at the external Edges of the dead Parts, the dead Part becomes dark coloured & dry: the ulcerative Absorption beginning at the Edges & going through the whole Surface of Contact between the living & dead Parts, the Slough is ultimately thrown off like any other extraneous Body.

843. As the weaker the Part is the more easily it is acted on by Caustic, so the greater the Strength of a Part, the more readily the Slough will go on.

844 New formed being weaker than original Parts, it is evident they will suffer their Life to be much sooner destroyed by Caustics.

845. From 844 we are able to learn, why in new formed Parts, Mortification is so easily induced as in Cicatrices &c.

845. Also why Caustics so easily destroy the fun=

gous Excrescences of Ulcers &c

9. We know with some Certainty how far the Parts of the Body, the Brain excepted, & with what comparative Facility they go through the Process of sloughing, the nearer the Heart, cæteris paribus, the more readily the Process of Separation will go on; the common Integuments & Muscles will throw off a dead Part sooner than a Tendon, Ligament or Bone; as to the Brain it has not been ascertained whether it will slough or not, for before the Separation of the dead Part can take Place, the Patient generally dies.

847. In a Mortification no Incision or Wound is ever to be made, into living Parts at least, untill the Process of Separation is begun; a Portion of the Parts quite dead may however, be removed at Pleasure.

9. Thus if a Limb be mortified through its Substance, we may cut off a Portion of the dead Parts to lessen the Stench from so large a Mass of putrid Matter, & render the Patients Situation more comfortable, but we must not proceed to Amputation in the living Parts, untill a compleat Separation has taken Place

848. Hæmorrhages may arise either from a Wound made in an Artery by external Force, or by such a State of Weakness being produced by Disease in

the Coats of the Arteries themselves as to render them incapable of withstanding the Impetus of the Blood.

849 When an Artery in Health is divided, there is a natural Power of Contractility in its Coats, that disposes its Orifice to close & prevent the further Escape of the Blood.

850. This contractile Power is stronger in inverse Proportion to the Largeness of the Artery, in the larger Vessels it is not equal to the Business of restraining the Hæmorrhage, & therefore renders the Assistance of Art necessary.

851. Another natural Cause of the restraining in Hæmorrhage and which we call the accidental, is the plugging up the Mouth of the Vessel with coagulable Lymph.

852. Art is employed in restraining Hæmorrhages in three Ways.

1st By increasing the contractile Power of the Arteries.

2d. By increasing the Coagulation, & thus plugging up the Mouth of the Vessel.

3d. By Compression of the sides of the Artery together, near its Mouth, & thus rendering it impervious to the Blood.

853. The first Intention we fulfill by the Use of Stimulants, & of those the most powerful is the Oil of Turpentine.

854. The second Intention by such Remedies as will forward the natural & produce an artificial Coagulation of the animal Juices.

855. This Coagulation will be forwarded by the Retardment of the Blood's Motion.

Q. It is evident the artificial Retardment of the Motion of the Blood commonly takes Place when the bleeding is from an Extremity. We have sufficient Testimony of the Use of the Retardment of the Blood's Motion in the stopping of Hæmorrhage, when we see People faint who have suffered great Losses of Blood, & that on the Syncope taking Place the Hæmorrhage commonly ceases.

856. The Substances forwarding the Formation of the Coagulum, are spongy Bodies, as Lint, Tow, Agaric, Flour, Cobwebs &c

857. The Means productive of an artificial Coagulation of the Animal Juices, are the application of Matters which act chemically upon them, such will be the actual Cautery, concentrated Acids, boiling Water &c

Q. If the actual Cautery be used, it should be very thick & heated nearly to a red ~~hot~~ Heat.

858. The mechanical Means of stopping Hæmorrhage is by Compression, this is made by inclosing the Vessel near its Orifice in a Liga

ture applied by the Use either of the Tenaculum or the Needle.

859. The Tenaculum should only be used when we have sound & unossified Arteries, and those situated not in the Centre of a Muscle, but loose in the Interstices of Muscles and in the cellular Membrane.

860. The Use of the Needle is to be preferred when there is Reason to suspect the Artery is not quite sound, or when it is situated in the middle of a Muscle.

861. When the Needle is used a considerable Portion of the circumjacent Parts, as muscular Fibres, cellular Substance, Nerves &c is commonly included together with the Artery in the Ligature, which gives an additional Support to the Artery when weak or suspected to be unsound.

862. The Degree of Tightness to which the Ligature is to be drawn will be in Proportion to the size of the Artery & the Quantity of surrounding Parts inclosed in the Ligature.

863. The Ligature should be made thicker than is commonly done, that a larger Extent of the Surface of the Artery may be compressed.

864. An accidental Method of stopping Hæmorrhage is leaving the Vessel uncovered for in a continued Hemorrhage the bleeding of a Vessel is

ed, than in an incised one.

Q. Of this the Miller's Case whose Arm was torn off by the Wheel of a Mill at the Articulation with the Scapula is an ample Testimony. See Cheselden's Anatomy.

So also the Case of a Person sometime ago in Middlesex Hospital.

The Farmers are sensible of this, for they divide the Funis of their Calves & Lambs by tearing it in two.

865. The disagreeable & sometimes fatal Symptoms following the Use of the Needle where it is necessary to compress the Sides of an Artery together, do not arise from Irritation produced by a Nerve being inclosed in a Ligature, but from some Peculiarity in the Constitution.

Q. Of this Mr Hunter is satisfied, having several Times tied the Nerves with the Artery & no ill Consequence has ensued.

866. It sometimes happens that after tying an Artery consequent on an Accident or Operation, that the Artery shall bleed again at some distant Time, as one two or three Days, or even when Suppuration is going on; this mostly happens in the large Vessels.

Q. In St Georges Hospital a Boys Thigh was amputated for a Disease of the Knee Joint, repeated bleedings from the Stump which always stopped spontaneously, the Patient was so much reduced that at last he sunk; upon examining the Limb after Death, the Artery appeared sound untill an Inch within its Termination in the Stump where it was black & had lost its Elasticity.

The bleeding anew happens more frequently in the radial or ulnar Arteries than in any other.

867. When it arises within two or three Days it commonly is owing to some Circumstances attending the Operation, as tying the Ligature too loosely or too tightly.

868. When this is not the Case, & when bleeding happens after Granulation has taken Place, it may be attributed to a diseased State of the Artery.

869. The Artery should be laid bare if diseased, untill the sound Part comes in View & there a Ligature should be applied.

870. In some Patients after Granulation has taken Place after a Wound, or when a considerable Surface is stripped of its Integuments, or after an Amputation of a Thigh there will be a proper bleeding from every Point of the exposed Surface.

871. This will occur in Patients who are extremely debilitated & whose Vessels, even the smallest, want the Power of contracting.

872. The Term spurious Aneurism has been in

properly applied to an Extravasation of Blood in the cellular Substance, which Blood has escaped through the Puncture of the Coats of an Artery.

873. This may be either recent, or not recent; in both there will in general be a Necessity for performing the Operation of the Aneurism.

874. In this Case as there is a Lateral Wound in the Artery the Escape of the Blood will continue to go on because the Artery cannot contract itself Longitudinally & was it to contract circularly, there would be no Obliteration.

875. Therefore there will be no natural Cure in the Accident it must either kill or the Operation be performed.

876. In the non recent spurious Aneurism the Wound in the Skin is healed, the cellular Substance has thickened & with some Coagulum of Blood formed a Cyst into which Blood from the Arterial Wound is continually effused; this must ultimately burst & destroy the Patient unless the Operation for the Aneurism be previously performed.

4. The thickening of the cellular Substance round the Artery, & its being lined with tough Coagulum, will make this Complaint resemble the real Aneurism, but in the latter the Coats of the Artery are always forming the Cyst, in the former the Coats of the Artery are never dilated.

877. In this State the recent spurious Aneurism must always proceed unless it either destroys the Patient or the Operation be speedily performed.

878. The Arteries are subject to two Diseases Ossification & Weakness - the latter will be the predisponent Cause of Dilatation of the Coats of an Artery, to which alone the Name of Aneurism should be given.

879. The immediate Cause of Aneurism is a the destruction of equilibrium between the Force of the Blood's Motion & the Power of Resistance in the Artery.

880. Accident, or some violent Exertion of muscular Power, may give Rise to it but it more commonly depends entirely upon some diseased State of the Coats of the Artery.

881. This is more probable because it is not unusual to find several Aneurisms in the same Person from which it should appear that the Disease is a Weakness or Disposition to Dilatation in the arterial System.

882. Moreover the common Seat of the Aneurism is in the large Arteries, whose Coats are less muscular than those of the smaller.

883. An Aneurism we believe never takes Place from a Rupture or Wound of some of the Coats of an Artery & a Dilatation of the rest.

Q. This has been supposed to happen & has been called the mixed Aneurism, but from the Experiments similar to the following the Conclusion is to be made.

Mr Hunter laid bare the carotid artery of a Dog & afterwards thinned it with his Knife even to Transparency; no Dilatation of the Vessel ensued; three Weeks afterwards the Animal was killed & the artery on which the Experiment was made was not found in the least dilated, but thickened by the adhesive Inflammation & the Adhesion of the adjacent cellular Substance.

884. The Dilatation of the Artery will always be to that Side on which there is the least Resistance from the surrounding Parts, if there be no Resistance on either Side, it will be in that Direction in which the Blood is most forcibly thrown, if these Circumstances be equal on all Sides it is then uncertain in what Direction the Dilatation will be made.

f. In the Arch of the Aorta if an Aneurism take place, the Dilatation will be upwards.

In the Carotid Artery - outwards.
In the Abdomen - - forwards.
In the axilla - - downwards.
In the Ham - - backwards
In the Groin - - forwards.
In the Leg - - - uncertain.

Hence absorption of Bones often arises from its making Pressure against them.

The Artery will continue to swell in that Direction in which it first begins to tumefy, & the lower Part will be dilated more than the upper.

885. The natural Tendency of the Disease is to destroy Life: this is effected either by the Tumor bursting & the Patient dying of the Hæmorrhage or by its Enlargement [illegible] press upon some Parts essential to Life & hinder their Functions.

Q. It may suffocate by pressing upon the Trachea, if the Carotid or the Aorta be the Seat of the Disease; its Pressure on the returning Vessels may occasion Dropsy &c. If the Aorta in the Abdomen be the diseased Part, it may burst inwardly, or if it produce Absorption of the Bones of the Spine, it may swell outwardly & the Skin inflaming & sloughing & the Coats of the Artery undergoing the same Change, the Slough then gives Way & a fatal Hæmorrhage ensues.

886. When the Operation for the Aneurism is proper, it should always be performed as early as possible; this Rule will also extend to specific Aneurism.

887. The Operation is proper.

1st. When the dilated Artery can be included between the Ligatures.

2d. When there is a Probability that the Part is whose Support the Artery in Question was sufficient before, will be still nourished & supplied with Blood.

3d. When it has done no Mischief to surrounding Parts as Bones &c

4th. Where it is distinct & circumscribed not connected with Parts which may be incurable when exposed, as Bones &c

5th. When there is a distinct Pulsation in the Tumor.

6th When it is probable that there is no other Aneurism between it & the Heart.

9. By the first Rule all the Aneurisms of internal Parts will of course be excluded from the Operation.

As to Rule 2d — The only Arteries admitting of a Ligature will be the femoral & the brachial; but success here only is to be doubted of yet by no means improbable, the other Arteries are either out of the Way of Operation, or have free Anastomoses.

In the Aneurism of the interosseal, anterior and posterior Tibial Arteries, the Operation cannot take Place from the Difficulty of taking up these Vessels, therefore Recourse must be had to Amputation & also when a diseased State of the Bones &c in any Part is induced by the Pressure of the Tumor.

On the whole this Aphorism will allow of the Operation of Rule 3 - 4 - 5. pointed out in the following Arteries.

In the Carotid, above the Sternum.
In any of the Branches of the external Carotid.
In the Subclavian, when it has passed the
Muscles & in any of its Branches.
In the crural after it has given off the Profunda.
In the Popliteal.

Directions for the Operation.

1st When the Tourniquet can be applied between the Aneurism & the Heart, after putting it on, make a Longitudinal Incision in the Course of the Artery through the Integuments &c to a greater Extent than that of the Tumor: then cut into the aneurism & scoop out the coagulated Blood, as well as evacuate that which is fluid: the inferior Orifice will most readily be discovered, as it will throw out a little Blood of a venous Color; 2dly to discover the superior the Tourniquet should be slackened. Tye the Artery at least an Inch above the superior Orifice; the same Caution is not necessary respecting the inferior. When the Tourniquet cannot be applied, the Ligature must be passed both above & below the Tumor, before the Incision is made into it; it is then to be laid open through its Extent.

The Sac need not be cut out, but left to slough away: the dark Color of the Blood issuing from the inferior Orifice is caused by the Blood having a slow & retrograde Motion, which is explained by the next Diagram.

For Blood by having a slow Motion or by stagnating will even in the Arteries acquire a dark Hue: the older the Aneurism the more will the Coagulum approach to a brown color, & the more recent, the nearer will it be to the natural Color of arterial Blood.

When an Aneurism forms the cellular Substance thickens round it, but being elastic readily yields to Distension.

Aneurismal Cases.

A young Man had a Pain in the Calf of his Leg for two Years, at length he received a Blow on the Part, after which a Pulsation & Swelling soon appeared. The Operation was performed every Thing went on well to the fifth Day, when the Artery burst, either from the upper Ligature being applied too tight, or too low; before the Tourniquet could be applied he lost so much Blood as occasioned his Death. Upon Dissection the Artery was found perfectly sound above the Part where the Ligature was made.

2.

An Aneurism of the Crural Artery in the middle of the Thigh extended five or six Inches in Length, the Tumor being oblong; the Operation was performed & the Patient recovered in a short Time.

3.

Mr. Martin had an Aneurism in the popliteal Artery; the Operation was performed & he recovered the Use of his Limb so perfectly as to be able to dance &c.

Remarks on the Propriety of operating for the Aneurism of the popliteal artery in Preference to Amputation.

Whatever Objections are made to the Operation, the same must hold good also against the Amputation of the Limb.

That one, so much insisted on, of the Disease being most commonly a Disease of the arterial System & not of the Part in Question only, if true militates equally against Amputation as against the Operation.

If there be not only an Aneurism in the Ham, but another higher up as in the Artery, or in the Aorta, it is evident that Amputation of the Limb does not give the Patient a better Chance for his Life than tying the Artery, but it perhaps most commonly happens that whatever may be the general Disposition of the arterial System, yet the arterial Dilatation shall only take Place in one Part; now if tying & removing the diseased Part can be accomplished, the Patient still retaining the Use of his Limb, it is certain that the Operation must be highly preferable to Amputation; as the latter though it may preserve the Patient's Life, yet leaves him imperfect & mutilated.

888. In our Treatment of fresh Wounds it is necessary to consider.

1st The Nature of the Part wounded.

2d The Management of an Hæmorrhage should one arise.

3d Whether the first or second Mode of Union is to be desired, or whether Suppuration be indicated.

889. If the divided Parts are to be joined by the first Mode of Union, the Indication will be to bring them into Contact & retain them so — This will be fulfilled by Means of Bandage & in some Cases by Sutures.

890. But when a Part is to inflame & suppurate, it is better to defer the application of Bandage untill after Inflammation has subsided.

9. In treating of Gunshot Wounds it is observed that contused & lacerated Wounds will not heal without Suppuration. In Wounds penetrating Cavities, if the Wound be made to heal without In-

flammation & Suppuration, it is then similar to any other simple Wound; but if the suppurative Inflammation be to take Place, it will be requisite to advert to the Doctrine of Exposure of Cavities & of penetrating Gunshot Wounds, it must be evident also that if extraneous Bodies be introduced into the Cavity either by Accident or Design & not removed the suppurative Inflammation will be necessary.

811. Whenever a Wound is to go through the adhesive or the suppurative Inflammation, it is generally improper to use Applications which will adhere to the wounded Surface, become dry & which cannot be removed at the Pleasure of the Surgeon, hence the Use of dry Lint is extremely improper. But if the Substance to be applied is soft & moist, have no Continuity of Parts & can with Ease be removed on any Occasion it can do no harm.

Q. A Poultice answers this Description, & the best Manner of making it, is to pour boiling Water into Linseed Meal & add as much Oil or Hogs Lard as will keep it from drying, but Poultices cannot universally be made Recourse to & in Lieu of we use Lint dipped in Olive Oil.

812. When a Wound has suppurated & Granulations are arising, if they do not readily contract so as by their contraction to [illegible] the Formation

of a Cicatrix it will be proper to employ the Pressure of a Bandage.

893. Abscesses will be either sound or unsound.

By the former we understand Abscesses arising in healthy Constitutions or from some specific Disease

894. The Nature & Treatment of sound Abscesses will be readily understood from considering the Doctrine of the adhesive and suppurative Inflammation.

895. The Evacuation of the Matter contained in an Abscess is either obtained by the Abscess bursting of itself, or by an artificial Opening: Abscesses may be suffered to burst unless some particular Circumstances require an artificial Opening.

896. The Circumstance most generally requiring an artificial Opening is the Danger arising from the long Retention of the Matter.

897. All Abscesses of the Abdomen, Thorax, Brain, &c. & Joints should be opened artificially, or early.

898. When an Abscess is opened artificially, it is necessary in general that the Opening be large, to prevent the future Inconvenience of a Fistula.

899. When an Incision is made into an Abscess, the Wound should be so dressed as to prevent the reunion of the incised Parts by the first or second Mode of Union.

900. There are two Methods of opening an Abſceſs.

a By Caustic.

b By Incision.

Where no particular Circumstances as the Seat of the Abſceſs forbid, the Choice may be left to the Patient.

901. Another Circumstance indicating the artificial Opening of an Abſceſs will be, its being of such a Magnitude that the natural Opening will not be sufficient for the Discharge of the Matter.

902. In determining the Size of our Opening, it is neceſsary to have a Regard to the present Distension & future Contraction of the Integuments.

¶ This Note is added to explain, it not being clear whether Mr Hunter's Idea be properly conveyed.

If the Magnitude of the Abſceſs have produced only simple Distension without considerable Absorption, ulcerative or interstitial, on the Parts on which it is seated, it is not neceſsary to make a very large Opening, because when the distending Fluid is removed, the Parts will immediately contract themselves & recovering their original Situation, the Cavity will become obliterated; but if the Cavity has been made by the Ulceration & Absorption of the Parts in which the Matter is lodged, & not by simple Distension of the surrounding Parts, then it will be neceſsary to make a large & free Opening to prevent the Inconvenience of a succeeding Fistula; because here the Parts cannot contract themselves to Obliteration of the Cavity, but the Cure must be accomplished by Granulation like Fistula.

903. The living Principle will always be uneasy under extensive Exposure, & will therefore be proportionally excited to Action; hence large Openings in Abscesses where the Contraction of the Parts is not sufficient for the Obliteration of the Cavity, & consequently for the Cure, are always useful, because they are the Means of exciting the Process of Restoration.

904. Abscesses may be free from any specific Disease, may arise in a healthy Constitution, and yet certain Circumstances may retard their healing.

905. There may be.

1st Peculiarities of Situation.

2d The Stimulus of some deep seated foreign Body, as a Ball, Splinter of Bone &c.

The first Causes of Backwardness to heal we cannot alter.

The second Causes we must wait for the Removal of, before we can hope for the healing of the Abscess.

906. When Sores of any Kind have a Disposition to healing, the Surgeon has little to do, except to prevent any Obstacles arising that may hinder the Process of Restoration.

907. If dry Lint be used to healing Sores, it should be

be applied, so as not to extend quite to their Margins; if Ointments be used, they should be free from Stimulus.

908. Among the Obstacles to the healing of a Sore will be

Intemperance.

Neglect of Rest. and

The Granulations rising too high above the surface of the surrounding Skin.

909 The latter Obstacle is to be removed by Pressure as that of a Bandage, & by touching the Granulations with some metallic Salt, as Vitriol of Copper, Lunar Caustic &c.

910. New formed Parts being weaker than original Parts, are less able to support the Fatigues of the Offices of Life, than the latter; hence when a slight Stimulus is applied they readily inflame, & if this Inflammation be not removed, the suppurative & Ulcerative Stages come on rapidly, or Mortification speedily takes Place.

911. The Absorption of new formed Parts may be either

a Ulcerative or

b Interstitial.

912. The Tendons of Muscles are sometimes ruptured, & the Accident arises from Causes similar to those of the broken Patella: The Muscle being in violent Action at the same Instant of Time

that there is an unconquerable Resistance made by the Point to which the Tendon is attached.

9. This will be best illustrated by considering the Rupture of the Tendo Achillis; it is generally effected when the Muscles of the Leg become tired & unfit for voluntary Motion, as after long continued dancing; & therefore the Muscle will act involuntarily: hence the Cramp &c by this acting very violently & involuntarily, the Tendon is ruptured. In doing this the Patient feels little or no Pain in the Part, but seems to receive a Blow on the Gastrocnemius Muscle, & hears a Noise as of some elastic Body snapping in two: Inflammation &c may succeed, the Muscles may be [illegible] out & the Ends of the Tendon approximated together, & as much as can be retained so; when these Symptoms are removed no Inconvenience arises from suffering the Patient to walk, if he himself have Courage enough to do so, for there is no Danger of the Will throwing the Muscles into Action, & thereby producing a further Separation of the Ends of the Tendons; for the Will cannot now act upon the Muscle, but an involuntary Action of the Muscle may take Place especially during Sleep; & this is to be guarded against by placing a tight Bandage round the Calf of the Leg, & making the Patient wear

a high heeled Slipper or Sandal.

The Bandage & Sandal are now particularly necessary by Night & whilst the Patient is asleep. During the Day Time their Use may commonly be dispensed with; from the Back of the Sandal a Piece of Leather is to be carried & fixed to the Bandage, or a Leather Strap placed tight round the Calf of the Leg; where the Rupture happens no Bandage should be applied.

The Patient will find little amendment during the first two Months, but will after that Period, generally recover the Use of his Limb: Keep the Foot nearly at a right angle with the Leg the Heel a little raised; when the Patient walks he should turn his Toe outwards, & not attempt to bend his Knee.

The Ancle & Foot will commonly swell considerably. About three Weeks from the Accident, the Roller & Slipper may be left off: It may be asked when the Patient may attempt to use his Muscles; we answer, whenever he feels a Consciousness of a Power to use them.

Dr. Hunter broke his own Tendo Achillis in Dancing; it is not clear whether Cramp of the Muscles precedes the snapping of the Tendon, but it certainly immediately followed it.

913. In Order to the Cure of this Accident, the Indications will be

1st To place the divided Ends of the Tendons as nearly as possible to their natural Situation.

2d To take off, or prevent Inflammation.

3d To prevent the involuntary Action of the Muscle.

914 It is unnecessary to forbid voluntary Action of the Muscle because in the present State it will be no longer subservient to the Will.

915. Should the divided Ends of the Tendon not be brought into Contact but remain at some Distance asunder the Union will be accomplished by new formed Substance; [illegible] the Tendon be something lengthened; the Muscle will be however thereby shortened & its Power of Contraction lessened: no Inconvenience will ultimately take Place, for the Muscle as in the Case of Fractures of the Patella, & Olecranon, will acquire new Powers of contracting as equal to its Necessities.

916 In Wounds connected with Joints it is necessary to pay great Attention to the Motion during the Cure, if there has been Loss of Substance, without great Care on the Part of the

[illegible] Rigidity & Loss of Motion will be the event.

9. The Motions of the Shoulder Joint are restored with most Difficulty after any Accident or considerable Injury of that Joint because to some of them the Gravity of the Arm is an Obstacle; were it possible to heal a Wound of the Shoulder Joint with the Arm elevated then the Motion would be as easily restored as those of other Joints.

9.2 After the Inflammation has entirely subsided, & the Cure is somewhat advanced, the Joint should be gradually moved by the Surgeon from time to time that the irritating Matter may be changed, in a Manner similar to Elongation of considerable Lymph'd Adhesions between the Lungs & the Pleura.

End of the second Part.

Rationale of Surgery
Part third.

We now come to treat of those affections of the Body which are the Objects of Surgery that may more properly be called Diseases that is, those affections in which Parts have no Disposition for Restoration, but only a Disposition to Destruction, & which Disposition will continue to exist untill either it hath worn itself out, or has destroyed the Patient, or is cured by Art, in short those affections for which there is no natural Cure.

Inflammations whether arising spontaneously or from external Violence, Suppuration &c and accidents (unless so much Mischief be done either to a vital Part, or to the Constitution, that the Functions of the Body cannot go on) become themselves the Cause of Restoration. These we have already enquired into, so far as concerns the Principle on which their different Phenomena depend, and have also considered the particular Attentions by which we shall facilitate the natural Process of healing, in which in Gen. little is to be done except removing Impediments to the natural Cure: But in Diseases the present

Disposition is to be removed, & a new one induced in its Stead.

It has been shown that as Irritation in Health produces Disease, / So Irritation in Disease is to bring back Health. The Aphorism in general holds good, though in some cases of diseased Irritability an Objection may be made to it.

After some previous general Remarks on Indolence, we come to particular Diseases originating from that Cause; Tumors are those spoken of, but those only which originate from Indolence are there meant to be explained: The Definition given of them will indeed apply to Swellings from other Causes than Indolence, as Inflammation &c, but the subsequent Remarks will show that when speaking of Tumors in that Place, it was only intended to treat of indolent Swellings.

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918. Diseases or unsound Dispositions will be properly divided into the irritable & the indolent, or those in which there is a Disposition to too great or too little an Action.

919. Either of these Dispositions will be a Hindrance to the Restitution of Health, & must be changed before Health can be restored.

920. It is easier in general to increase the Disposit

on of a Part to Action, than to abate it.

921. In the indolent diseased Disposition, there is neither sufficient Power, nor sufficient Excitement to Action. In the irritable there is too great Excitement, without corresponding Powers.

922. Again in diseased Irritability Parts are impatient under any Removal from a State of Perfection, yet have no Disposition to set about the Process of Restoration. This Disposition may be either simple or connected with some specific Disease, as Syphilis, Cancer &c

923. When simple we must have Respect to the Principle laid down ( ) but when complicated with some specific Disease, both the specific & the irritable Disposition require Attention.

924. Diseased Irritability may be local, or it may be a State of the Constitution at large.

925. It appears in general to be passive, requiring the Application of some Stimulus to bring it into Action.

926. An increased Degree of Sensibility will in general accompany diseased Irritability, the living & sensible Principle commonly sympathizing.

927. Inflammations with diseased Irritability should not be hurried on to Suppuration, nor, on the contrary should those Means be used which lessen their Powers; the Indication being simply to

lessen Violence of Action, not to diminish Powers. Opium may be properly used in Solution, or mixed with emollient Poultices; or Preparations of Lead &c.

928. The increased Irritability of the Constitution is lessened by the Use of Bark & those Means which increase the Strength.

929. When a Suppuration has taken Place in Parts under this State, if an Opening is to be made to discharge the Matter, a Caustic is to be applied in Preference to the Knife, for Incision has not in general such favourable Consequences as the other Method.

¶ Caustics are not followed by so speedy or extensive an Inflammation as the Knife, an incised Wound in such Circumstances has frequently for its Sequel an erysipelatous Inflammation.

930. Ulcers have sometimes a diseased Irritability & when this is the Case, the Dressings in general should be of the mildest Kind.

931. We cannot a priori always determine what Application will assuage the Pain & other Symptoms, we must therefore change our Dressings until we meet with one fulfilling that Intention.

¶ Some Ulcers which have shewn every Sign of the greatest Irritability, as Pain &c. which have been long time unrelieved & often increased by mild dressings, but which grew easy under the Use of the most powerful Stimulants, as the Ol: Terebinth: but we would first try Poultices with Opium &c.

932. The unsound Disposition with Indolence, or the diseased indolent, may be either the affection of the Constitution or of a Part: the Constitution will rarely be indolent in a great Degree.

Q. We meet with few Constitutions which will not readily take on Inflammation a Stimulus being applied to any Part of the Body in which there is no particular local affection; how far constitutional Indolence may prevail we have a Proof in Scrophula.

933. Specific Diseases may give Rise to or accompany Indolence in Parts, as the Syphilis the Scrophula & sometimes the Gout.

934. The common Effect of Indolence in Parts, is a thickening of them, the Process of Restoration in Parts in a State of Indolence is extremely slow.

935. As the Extent & spreading of Disease in diseased irritable Parts is great & rapid, so the Disease of Parts in a State of Indolence is in general very circumscribed & rarely spreads to any considerable Extent.

936. The thickening or swelling of Parts morbidly indolent is of two Kinds, namely,

1st. Interstitial
2d. Superadded.

and indolent Swellings commonly go on to a considerable Degree, before any Knowledge of them is communicated to the Mind; but when long further advanced, some dull heavy Pain, with Sickness will be produced, but this probably arises from the Distension of the surrounding Parts.

937. The Causes of indolent Disposition arising in Parts are

1st The long continued Action of Cold.

2d Violent Actions terminating in Weakness.

3d Pressure from mechanical Cause.

Indolence may be also spontaneous, arising without any visible or known Cause.

938. The first Species (936) or interstitial thickening is that in which no new or distinct Parts are formed, but there is simply a Swelling or Enlargement of the original Parts, as a Corn, Varices of Veins &c

939. The second (936) or diseased Indolence with Parts superadded, is that in which new Parts are actually formed, distinct from the old.

940. The Intentions of Cure will be to increase both Actions & Powers. In the interstitial thickening, as the Swelling generally consists in the Deposition of coagulable Lymph in the cellular Substance &c, we endeavour to procure a Reabsorption of it, & to this End we employ those Means which increase the Action of the Absorbents, as Mercury, Pressure applied so as to stimu

lete, Fumigations &c, Care is, however, necessary not to excite the Parts to greater Action than they can support, least Mortification ensue.

941. When these Thickenings cannot be removed by Absorption (940) stimulating Applications may produce a Cure by exciting the suppurative Inflammation in them; however this Suppuration is with Difficulty brought about, & when it has taken Place & Ulceration followed it, the Cure is not easily obtained.

942. Abscesses have been divided into caused & uncaused; of caused Abscesses an Account has already been given, of those which are uncaused & in which there is a Disposition of Indolence it will be better to speak when their common Cause & Consequences Scrophula & Fistula come under consideration.

943 Ulcers or Sores may have an indolent Disposition & thence a Backwardness to heal, when simple Indolence is the Cause we have Recourse to those Means which will excite the Parts to Action, as Turpentine Balsams &c.

944. Corns are an Instance of Indolence from Pressure, the Cuticle thickens from the Stimulus of Necessity, & as it increases in Thickness, presses on the Skin & produces Uneasiness & Pain.

9. The Cure of Corns consists in obtaining a Separation from the Cuticle, either by leaving off the

Relieve soaking the Part often in warm Water, & keeping it always moist & defended by some proper Plaister, or by removing it at once: when a Corn has been of long standing, it is often difficult to remove by Excision, as a Wound of the Part underneath is often followed by Inflammation and even Gangrene: but we may attempt it by removing the Pressure, soaking the Part long in warm Water & then applying a Blister to obtain the Separation of the Cuticle from the Cutis

945. Varicous Veins are also an indolent thickening from Pressure; if the Disease be not too extensive, or the Operation too hazardous, they may be dissected out & the Inconveniance thus removed.

946. Chilblains may be given as an Instance of indolent thickening from Cold, though they have in them especially at first somewhat of an increased Irritability. The Constitutions most disposed to this Kind of indolent thickening, are the delicate & such as have but small Power of generating Heat.

947. Schirrus of a Gland may be offered as an Example of violent Action terminating in Weakness, & acting as the Cause of an indolent thickening.

948. Of the spontaneous Indolence, Proofs may be given in the Swelling of the Legs so common in Barbadoes, & sometimes seen in this Country; & in the Swelling of the Lymphatic Glands.

949 Some indolent Swellings may require Extirpa

tion, as in increasing their Action in Order to Suppuration, they may be made to turn out cancerous.

950. Lymphatic Glands may slowly, gradually & indolently tumefy 'till they become of a size which may render Extirpation necessary, from their making Pressure on some important Part & disturbing its Economy, or from their occasioning a deformity.

Q. Of this kind are the swellings of the inguinal Glands, which have been so often mistaken for venereal, & for which People have been even salivated. Sometimes these enlarged Glands are so situated that Extirpation is difficult & to be undertaken with the greatest Caution; this will be return'd to when we come to Tumor & Scrophula, to which two Articles they belong.

951. Wherever a Cure can be attained, the Indication will be the same, either to increase the Action of the Absorbents, or to remove the Part entirely.

952. In all indolent thickenings we should endeavor to ascertain whether they arise from the Constitution or whether they are purely local (See Constitutional local & original local)

953. Indolent swellings of Parts will be either circumscribed or diffused, by the former we understand a Tumor (954) the latter we mean when we speak of thickenings of Parts.

Q. When we speak of indolent swellings being diffused, we only speak as comparing them to Tumor to indolent thickenings compared to swellings of

Parts from the same Causes are generally circumscribed.

954. By the Term Tumor we mean a circumscribed Substance produced by Disease & differing in its Nature & Consistence from the surrounding Parts.

955. Tumors may be divided into

a The solid.

b The encysted.

956. The solid (955 - a) may be subdivided into three, namely

1. The interstitial.
2. The superadded or new formed Substances.
3. The mixed.

957. The first or interstitial (956.) belongs to Scrophula. The second or superadded are entirely new formed Substances they take their Rise from some fixed Point from which they grow as from a Root, which will be of different Sizes; they are perfectly circumscribed, are generally more detached from a Lymphatic Gland & they ~~have~~ no Coat.

The third or mixed consists of those Tumors called Wens and Scirrhi, in which there is a Mixture both of enlarged original & of new formed Parts.

958. These differ very much in their Appearance & Consistence, being only fatty Tumors, sometimes almost cartilaginous, when cut through, they somewhat resemble a divided Lemon.

959. The second & third Species will rarely if

one which [illegible] other Treatment in order to a
[illegible] then Extirpation.

300. Previous to the Extirpation of any Tumor it is necessary that we enquire

1. What Parts it adheres to or is connected with, & its Situation.
2. The Manner in which it ought to be extirpated.
3. Whether it is necessary to remove any of the surrounding Parts with it

301. The second Species may be of different Degrees of Hardness, may grow from a Bone & be bony or from a Tendon & be of a ligamentous Firmness.

302 They may also be adherent to the Skin, to a Muscle &c & they may be either superficial or deep seated.

303. The third may be loose under the Skin, or they may adhere to the Skin; they may be situated superficially or deep, upon a Muscle, a Bone, a large Blood Vessel &c

304. If the surrounding Parts be not diseased, they may be suffered to remain; they must be removed as far as the Disease extends, for it must be a Rule to remove the whole of the Disease.

305. If the Tumor be loose & does not adhere to the Skin, a longitudinal or crucial Incision, according as it is large or small, deep seated or superficial, may be sufficient, & then the Tumor

may be raised from its Bed & removed.

o. But if it be adherent to the Skin then a Portion
f the Integuments must also be removed, at least
as large as the Extent of the Adhesion.

0th. If it arises from a Root originating from a
Bone, it is to be removed by the Saw, Pincers or
Chisel, in this Case it may also be necessary to
cauterize that Part of the Bone from whence
it sprang.

A young Lady had a Tumor situated on her
ower Jaw; it became hard & almost bony; Mr.
Hunter pared it away even to the Surface of the
Jaw Bone but it arose again; when it had been
pared off a second Time & the Maxilla cauterized, the Patient got well: the Tumor consisted
f a thin Plate of Bone forming a Shell, which
contained a cartilaginous Substance.

A young Woman had a cartilaginous Excrescence growing from the upper Jaw after the Extraction
f a Tooth; it was removed but grew again
after being a second Time extirpated, the Patient
got well, these seem to occur most frequently
in the Jaw Bone or on the Tibia.

the third or mixed calcareous Earth is sometimes deposited, they not unusually fall into a kind
f Suppuration, without the surrounding Parts being
affected; in removing them great Caution
sometimes required; Mr. Hunter has dissected

tern of the temporal & carotid Arteries, & once laid the Trachea itself bare.

968. If it be situated on any large Vessel be great Care will be required in the Dissection of it from its seat see Note 957.

969. If it be only a fatty Tumor not adhering & of a small size, a simple Incision down to it will be found sufficient, & then the Surgeon may squeeze it from its Bed with his Fingers.

970. When the third or mixed very much enlarges they are not unfrequently productive of Pain however it is not acute, it is of a dull heavy kind, and depends upon Pressure upon Parts more sensible. The Stomach sympathizes with the Affection, and Sickness is not an unusual circumstance.

971. As in the Pain so likewise is the Inflammation, when it arises, that of the surrounding Parts; these however, are seldom much Vitiated.

972. As to endeavouring to induce the suppurative Inflammation in these Tumors the Opinion given will here be applicable.

973. The encysted Tumors are Substances contained in a Coat, which is either natural or acquired.

974. The natural are the Hydrocele, Dropsy of the Ovaria, Pericardium Sacculi mucosi &c in all which the Contents are inclosed in a natural Bag.

975. The Contents of encysted Tumors, whose Tunic

are acquired, will be various in their Consistence & Nature. Hydatids form a considerable Class of these Tumors.

976. Hydatids are Collections of watery Fluid inclosed in an adventitious Bag we do not know the Cause, Nature or Manner of their Formation.

977. Every Part of the Body where there is cellular Substance becomes the seat of Hydatids, but more commonly the Plexus Choroides of the Brain, the Tunica Vaginalis of the Testicles, forming a spurious Kind of Hydrocele.

978. They are of different Sizes as they enlarge their Coats thicken & become stronger; their Coats are but little vascular. sometimes one large Hydatid will contain several smaller ones one within another. they are often found in the Uterus the Kidneys the Liver, the Thyroid Gland the Lungs &c but how formed is unknown.

Q. Hydatids. It is difficult to explain the manner in which they are formed or to determine which are formed first, the exterior or the interior ones: Are they not Animals of the Polypi Kind?

Remarks on particular Hydatids.

Hydatids are sometimes formed in the Brain & mostly in the Plexus Choroides; these occasion no Symptoms peculiar to themselves & from their Situation can admit of no Cure.

Uterus and Ovaria. The Fluid contained within the Hydatids found in these Places is sometimes of a gelatinous Nature: they are more detached at first than afterwards: sometimes they increase to an enormous Size occupying the greatest Part of the abdominal Cavity & then they are called encysted Dropsy. It is to be distinguished from Ascites by the Manner of the Attack; the Patient first feels a Weight & Swelling on one Side which as it grows larger rolls about untill at length increasing gradually in Size it becomes fixed, and then the Abdomen swells regularly and gradually; the Health of the Patient is often but little affected by it: tapping is the palliative Cure & should be done with a large Trochar, least the Fluid be gelatinous: When large they will adhere to the Parietes of the Abdomen & then the Operation is safer than at any other Time: they are often made up of a Number of Cells so that sometimes only a small Quantity of Fluid is discharged by one tapping: As this Disease will certainly kill in the End, if it can be ascertained early it would perhaps be right to make an Incision through the whole Length of the Tumor & extirpate it entirely. Electricity has seemed of late to have been of very great service to one Patient afflicted with this Disease.

Hydatids of the Kidneys. Here they are generally situated between the external & the internal Lamella of the proper Tunic of the Viscus & are out of the Reach of Relief.

In the **Liver**. They are not commonly found in the Substance; sometimes they are discharged externally, the Bags making their Way through the Peritoneum adhering to them Inflammation & Suppuration coming on the Integuments ulcerate & the Hydatids are discharged. Mr Hunter on opening a Woman found a great Number of them inclosed in one common Bag.

In the **Lungs**. Sometimes they make their Way into the Trachea & are coughed up.

In the **Thyroid Gland** they may become troublesome by impeding Deglutition.

They are found in the cellular Substance in different Parts of the Body, especially in the Neck & about the Lips of Women.

979. As to the Cure of encysted Tumors we can do little, unless we can either procure a Discharge of the contents & an Obliteration of the Cavity of the Cyst, or an entire Removal of the whole

983. Tumors may appear in Parts where they were not formed, but into which they have made their Way from some deeper Part, this Circumstance the Surgeon should consider when he is about to extirpate a Tumor.

984. If the Surgeon be not attentive to this Circumstance he may be deceived & operate ineffectually, only removing a superficial Appearance of Dis

ease, & neglecting the deep seated Cause of it, & when invariably some other Tumor arising has driven the first into its present Situation.

982. Some encysted Tumors are found to contain a Quantity of Hair; the internal Surface of these has taken on the Nature & Disposition of the Cutis & Cuticle, & thus given Room for the Growth of Hair.)

9. In this Manner we suppose Hair is formed which is found in Tumors of the Ovaria: Mr. Hunter once found an encysted Tumor in a Sheep which contained a Ball of Wool: now it is probable this was thrown off from the interior Surface of that Tumor on which it had formerly grown.

983. The Carbuncle as to its ultimate Effects must have been classed with Mortifications, as it produces a considerable sloughing of soft Parts, but some characteristic Appearances attend it which would shew it to be a distinct Disease & of a specific Nature.

984. The predisposing Causes are consequently uncertain. It cannot be supposed to be owing to Weakness, as in general it arises not far from the Source of the Circulation, & it does not commonly arise in weak Parts, or in weak Habits; the Seat is commonly the posterior Part of the Body, as the hinder Part of the Neck, the Back &c

985. It begins with a considerable Inflammation

of the Skin approaching nearer to the Carbuncles than to any other; the Skin is somewhat tumid but not prominent; the Part has a doughy Feel; in a short Time a Pimple arises, the Inflammation spreads rapidly & widely & the cellular Membrane to a considerable Extent mortifies, the Skin & Muscles still retaining their Life.

986. The Skin above has Pimples which now ulcerate forming large Holes through which the Sloughs of the cellular Membrane are thrown off, & as they come away leave large Chasms which are loosely covered with the Skin, which is flaccid & hanging inwards; sometimes the Matter discharges itself through an infinite Number of small Holes.

987. The Disease though it has its Progress chiefly in the cellular Membrane, seems to begin in the Skin, & the Matter generated seems to be of a specific Nature which contrary to the Course of all other Matter, tends inwards & burrows in the cellular Membrane which wants Power to resist its spreading, from a Want of the adhesive Inflammation.

988. Should not free Openings be made in the Instance of the Disease to give free Exit to the Matter, & to prevent its spreading & diffusing itself through the cellular Membrane?

989. The loose Skin remaining after the coming away

of the Sloughs of cellular substance, should not be removed as it will commonly in the end unite with the subjacent Parts & thus greatly forward the Cure which if things go on well is in this time necessary as in wound Ulcers.

900. Boils seem to be a Species of Carbuncles, but none of the adhesive Inflammation arising in the circumjacent Parts they do not spread; the Core of Boils vulgarly so called is a ~~Slough~~ a Slough or mortified Part thrown off.

901. The aged & free Livers are most subject to Carbuncles, the young to Boils.

902. Though the cellular Membrane sloughs, yet Suppuration freely goes on, in which Matter is either furnished from living cells, which are endeavouring to throw off the dead Parts, or from cells which are also about to die.

903. Carbuncles are sometimes local & sometimes they seem connected with a diseased State of the System.

904. Bleeding is rarely proper, though it may sometimes be indicated at the Beginning, if there appear Symptoms of an inflammatory Diathesis.

905. A diseased State of the System, as Scurvy, may occasion both interstitial & ulcerative Absorption of new formed Substances which we have shewn are weaker than the original: hence in violent Scurvy, Cicatrices have been known lastly to ulcerate & even Calluses which formerly ren-

united broken Bones become absorbed, & the Ends of the Bones loosened.

Q. In Lord Anson's Voyage. Here the Constitution not having the Power of supporting the new Parts, or even the original reclaims, as it were, the former and causes them to be absorbed.

996 Tetanus or Locked Jaw is a Disease which consists in an involuntary Contraction of voluntary Muscles; sometimes it becomes an unnatural Contraction of involuntary Muscles, & then perhaps it becomes fatal.

Q. Unnatural Contraction of Muscles is a Genus of Diseases that has many Orders; to it belong Tetanus, Cramp, wry Neck, St Vitus's Dance, Subsultus Tendinum, one of the Kinds of Quinsey, Ague: it bears some Analogy to Epilepsy and Catalepsy; though these are properly Affections of the Brain; it is not peculiar to the human Species Horses Monkeys, Dogs &c are subject to Tetanus.

997. When it affects the Muscles of the lower Jaw it is called locked Jaw; when it extends to the anterior Muscles of the Body it is called Emprosthotonos, when the posterior Opisthotonos.

998. The predisponent Causes will be whatever can render the Habit weak & irritable.

999 Amongst these Climate is a very powerful one: In hot Climates it is extremely common, being produced by the slightest occasional Causes, and even sometimes arising spontaneously.

1000 In temperate Climates it is more rarely found, in very cold Climates it is unknown.

f In this it is similar to other spasmodic Complaints which are very common in warm Climates but rarely felt in cold ones.

1001. Other predisponent Causes may be Fever, large Suppurations, Wounds of Tendons & Ligamentous Parts.

g These act upon the Principle of producing Weakness & an irritable State of the nervous System. Locked Jaw has been attributed to the Wound of a Nerve or a Tendon; with Respect to the former the Opinion appears quite erroneous, with Respect to the latter, as Wounds of the Tendons do not heal readily, they induce an irritable & weak State of the System & this being present, Irritations which do not become visible give Rise to it. Upon that Principle it is that it has been known to follow large Wounds which have considerable Suppurations & which induce a weak & irritable State of the Habit. It does not arise here from Inflammation, for it does not take Place until after Inflammation has gone off. Mr Cline is satisfied from his Experiments that Wounds of Nerves, or the including a Nerve in a Ligature made upon an Artery, have no Power particular Tendency to bring on Locked Jaw, which he has frequently found to take Place, where it was evident no Nerve was wounded

1002 - The most trifling external Injury may be the occasional Cause of this Disease, even a Scratch or Puncture, where neither Nerve nor Tendon are found to have suffered.

1003. It appears to be a Disease of the nervous System & not of the Principle of Life, every Circumstance appertaining to the latter commonly remains natural & unaltered some Time after the Attack of the Disease.

1004. The Muscles of the lower Jaw seem more disposed to take on this Affection, than any other Muscles; here the Disease commonly begins and soon spreads itself to other Muscles. at length the Spasm being extended to those Muscles whose Action is involuntary & necessary to Life & then the Patient is destroyed.

1005 It begins with a small Degree of Stiffness in the Muscles raising the lower Jaw, the Patient finding a Difficulty to open his Mouth; at length the Jaw becomes less & less capable of being depressed; the Muscles of the Eyelids are next affected & the upper Eye lid falls more & more, so that the Patient looks like a Person going to sleep. Sometimes Soreness of the Mouth & Throat preceding, but this is only accidental; then the Muscles of the Head become affected; at first the Head is held immediately erect by the Spasm, then it is drawn backwards; the Muscles of the Spine become next affected, & the Body of the Patient is bent backward than those of the Abdomen, the Bowels are drawn inwards; the Patient complains of a Pain in the lower Part of the Sternum, perhaps from the Diaphragm being affected a Difficulty of Respiration from the Spasm extending to the Diaphragm, intercostal Muscles &c in which Part an excruciating Pain like Cramp is felt. Universal convulsive Motions of the Body sometimes attend, like to Subsultus Tendinum. In other Respects Health seems to remain & the Functions of the Body go on; the Spasms of the involuntary Muscles, however increasing in Violence & perhaps the Heart also becoming similarly affected the Patient is cut off — sometimes Stupor precedes his Death.

Of Stupor. This shews that the Brain must be somehow affected, as it is neither muscular, nor connected with Muscles, it is difficult to say how this affection of it is produced; is it from any Impulsion on the Brain induced by the Spasm on the Muscles of the Neck making Pressure on the Jugular Veins, or is it from Sympathy?

1056 - Should the Patient live untill the Habit becomes accustomed to the Disease, it then wears itself out & at length the Patient gets well; in general, however, it kills before the System can be habituated to its Action.

1057. The Disease does not always increase gradually & regularly as described, 1055, but sometimes it will extend itself suddenly from the Jaw over the whole Body, so as to excite unnatural Contraction in the Muscles in general. When the Spasm confines itself to the Jaw the Disease may be called mild & then it does not prove fatal.

1008. The Disease kills at different Periods of Time, but if the Patient live through the second or third Week from the Commencement of the Complaint, the Constitution becomes so much habituated to it, that it loses its Power of destroying Life, then wears itself out.

1009. The Disease continues sometimes even ten Weeks, a great Part of the Time remaining stationary, & at last the Patient gradually loses the spasmodic Affection & his Muscles are resolved to a natural State.

1010. All Ages are subject to it, of Constitutions the delicate & relaxed are most liable to its Attack

1011. When it kills the Muscles remain contracted till the Contraction is removed by Force but when that has relaxed them they do not contract again: no preternatural Appearance presents itself upon Dissection in any Part of the Body, in general the Disease kills suddenly.

1012. From considering what has been said we are perhaps able to discover

Why the Patient remains under the Disease a long Time without his general Health being affected

Why the Disease kills & why it may kill at different Periods & why it commonly ends for the Patient unfavorably.

1013 No internal Remedy has yet been discovered that will cure or relieve this Disease.

(f. 1013. 1014) Bark, Opium, Blisters, Camphor, bleeding, warm bathing & a Variety of other Methods have been tried: Whenever Mr Hunter has seen the Patient recover, the Disease has seemed to have gone its Course & to have worn out itself, without his having had any Reason to attribute any thing to the Power of Medicine: He recommends the Sugar of Lead to be tried upon the Principle of the known Tendency of Lead to produce Relaxation of Muscles & Mobility in them to contract externally; as a Substitute for a Change of Climate he recommends that the Patient should be put into a cold Bath or an Ice House he never saw a Patient die after the third Week.

1014. External Applications have also ~~[illegible]~~ been found ineffectual; as Climate is one great predisposing Cause to the Disease a Change from the present to a colder might be tried. Electricity has once been found serviceable

1015. As the Indication of Cure must be to relax the present Contraction of the Muscles, & to take off the Disposition in other Muscles to unnatural Contraction, the internal Use of Lead migh probably deserve a Trial, as Lead by inducing Paralysis may cure one Disease by producing another.

10[illegible]6. If the locked Jaw have followed a Wound in any Part of the Body, the Removal of the Part is not found to remove or lessen the Disease, unless the Tetanus arises during the State of Inflammation of the Wound. For when the Inflammation & Irritation of the Part which received the Injury are gone off, it must be evidently useless to remove it, in Case a locked Jaw should have come on; because whatever Irritation was heretofore applied to the Part, is now taken away, & that is no longer the diseased Part, nor can it now tend to cause or keep up the Spasm, its Action on the System has been already produced & terminated.

Cases of locked Jaw.

1. A locked Jaw & Convulsions of the Muscles of the Arm from a compound Fracture of the Radius; Heat & Perturbation of Mind increased the Symptoms; he was always observed to be worse after drinking any Thing warm, or after warm external Applications; Opium & Bleeding were tried; he died on the sixth Day.

2. A Soldier received a Wound in his Leg, when it was nearly well, a locked Jaw came on

Musk & Opium were tried for three Weeks the Patient finding no Change would not take any more; he continued in the same State for more than seven Weeks & then began to mend, which he continued to do insensibly untill he recovered his Health. He took Bark & Port Wine during the whole of his Illness; his Wound healed long before the Complaint left him.

3. A Soldier with a locked Jaw after using Musk Opium & even the cold Bath & finding no Relief, left off all his Medicines. he took none for eight Days & then began gradually to mend.

4. A young Man had his Thigh amputated had violent Pain in it & frequent spasmodic Affections of the Muscles of it — 13th. Day the locked Jaw came on, 15th. became locked all over, 16th. he died. Opium, Æther & sweating were employed, the Muscles continued rigid after Death but when relaxed by Force, did not contract again.

5. A Sailor had a Tetanus affecting the Jaw & Muscles of the Spine come on after having received a Wound in his Wrist; during his Illness, he had Ischuria & Costiveness, both of which were relieved by a Clyster; Opium Camphor, Bark Steel Port Wine Cold bathing were all tried. he lived some Days, had Pain of his Heart & great Oppression about that Organ having come on he died suddenly

6. A Man had a locked Jaw, it was uncertain

whether this Disposition to it was induced by a Wound of the ~~Foot~~ Tongue, he died the ninth Day the second Day of his Illness the Spasm extended to the Muscles of the Neck & Spine; the fourth his Skin became exquisitely sore to the Touch, his Eye Lids did not shut properly, he had a new [illegible] Day [illegible] Stupor; the eighth his breathing was difficult, & he had a Pain in the lower Part of the Sternum; on the ninth he died suddenly.

7. Locked Jaw came on after trepanning; Opium was freely given; no visible good Effect followed it but after a Fortnight the Patient mended gradually and got well.

8. Locked Jaw arose spontaneously after a nervous Fever; the Patient took Nothing but Port Wine & recovered.

9. Locked Jaw arose in a Child of two years old after a Scratch of a Finger by a Saw, & died the sixth Day.

10. Locked Jaw arose spontaneously after Dysentery.

Upon the whole from what has been said we must be justified in acceding to the Conclusion given in (1013.—1006.)

1017. Scrophula, is a Disease which may be considered as constitutionally local. It is not hereditary; as in other Diseases so in this a Susceptibility of the Disposition for a diseased Action, is all that c be inherited.

1018. It is a specific Disease every Process of which is marked with Indolence & Slowness of Action, whether it produces Tumefaction, Suppuration or Ulceration, all of which when the Disease is true Scrophula go on with little or no Pain.

1019. When it produces Swelling of a Part, the Tumefaction increases slowly; there is Hardness with little Pain or Soreness; all the Appearances of common Inflammation are wanting. Should no Resolution of the Tumor take Place, a Kind of Suppuration is produced.

1020. When the Tumor becomes soft & suppurates, which it does very slowly & without Pain, the Matter very gradually makes its Way to the external Parts.

1021. The Ulceration of the Integuments in Order for the Evacuation of the Matter is equally slow & tedious; the Matter does not make a Point as in healthy Abscesses, but it stretches the Skin equally to some Extent & renders it as far as it extends it, shining & of a purplish Hue. In this State the Disease will frequently remain stationary for Months. When the Skin can no longer resist the Pressure of the Matter it bursts, and a Fluid like a Mixture of Curds & Whey is evacuated; there is rarely any common Pus when the Scrophula has gone on pure & unmixed with the common Inflammation.

1022. When the Abscess has emptied itself, it does not readily fill up, or suffer its Cavity to be obliterated but will then remain a Fistula, the small Hole through which the Matter burst remaining open.

1023. When scrophulous Ulcers granulate, the Granulations are large soft & pointed, appearing like a transparent glossy Substance, their Sensibility little, the Margin of the Sore is loose, flattened & turned inwards, the Skin round about it has a purplish blue, the Granulations want the Power of contracting so that the Ulcer will continue stationary or at most the Sore will be scarcely diminished.

1024. The Process of Cicatrization is equally difficult & tedious, & when formed has not a healthy Appearance.

1025. The Disease seems to have a sedative Effect upon the System, diminishing all the Actions of the Parts which it invades.

1026. It has a Power of producing in the Parts surrounding the Part originally diseased a similar State, but it does not produce continued Sympathy in any great Extent.

1027. The predisposing Cause is a delicate & irritable Constitution with weak Powers of Action; the Parts most disposed to take on scrophulous Action are the Lymphatic Glands, especially those which are most exposed to the Influence of the Atmosphere, as the Glands of the Neck & Lungs, the Mesenteric Glands, Joints, particularly those of the Foot & Hand Ligaments, the soft Ends of Bones in all which Parts, the Strength & Powers of Restoration are but small.

1028. Persons between the Age of 3 & 20 of fair Complexion & light Hair who do not appear to have the usual Quantity of red Blood in their Vessels, & those who live in Climates which are very changeable and irregular, are most liable to this Disease.

9. It is not peculiar to the human Species some Quadrupeds as Monkeys, some Birds as Turkies are subject to the Action of Scrophula.

1029. Though it produces continued Sympathy to a small Distance, it has no Power of affecting the Absorbents, nor is the Disease capable of being communicated by them; it cannot like the small Pox be communicated by Inoculation.

1030. The Skin is rarely if ever primarily & ordinarily affected by this Disease, it may however fall into it by continued Sympathy.

1031. The exciting Causes will be extraneous Violence, especially if not very great, sudden Application of, or sudden Exposure to Cold, the use of Mercury. The slightest Degree of external Violence in Habits predisposed to it 1026–27 will cause the Part to take on a scrophulous Action —

1032. The Susceptibility of Scrophulous Action in some Constitutions is so great that any Complaint which deranges the Habit for a Time as Fevers, Measles, Small Pox will give Occasion to it

1033. The Appearances of Scrophula will vary according as different Parts are affected, however it will always be found with one of the following Circumstances.

1. A circumscribed Tumor.

2. A Tumefaction more diffused.

3. A Suppuration with or without Tumefaction.

1034. The circumscribed Tumors are chiefly Lymphatic Glands, although they are sometimes found in the Brain, Breast, Uterus & Testicle.

1035. When the Disease attacks a Part which may suffer without much Disturbance of the general Health, we are often unacquainted with the Nature of the Disease untill a Swelling in Consequence of Suppuration appears either in the Part originally Diseased or in some other Part to which the Matter has make its Way, the Suppuration going on without Inflammation & perhaps without Pain.

1036. When the Disease affects the Joints the Pain is more considerable than when other Parts are attacked & some mixture of the true Inflammation is mixed with it.

1037. Whenever the lower Extremity is the Seat of the Disease the Limb appears longer than the other this is from the Patients particularly favouring that Side & leaning on the other.

1038. Children are often lame for Months and at length a Swelling has appeared in the Joint;

than scrophulous Abscess appear about the Fingers Hand or Foot the Swelling sometimes does not subside even after the Matter has been Discharged.

1039. Lumbar Abscess sometimes appear without any previous Pain, sometimes Patients remember to have had Pain in the Loins in general; however if they have Pain it is felt beyond the Seat of the Disease as in the Thigh the Knee or Foot. The Matter very frequently here presents itself in the Thigh though formed in the Loins.

1040. Patients under thirty are most subject to this Complaint; it is produced by the common exciting Causes of Scrophula. It is to be distinguished from a Disease of the Hip by Attending to the Motion of the Foot.

41. Abscess in the Joint of the Thigh is of the scrophulous Kind: there is commonly a thickening of the soft Parts surrounding the Joint. the Patient has a Sense of Weakness in the Limb which wastes & has its Motions confined.

42. White Swelling is a Term that may be applied to every scrophulous Swelling of a Joint before the Skin becomes inflamed it is generally attended with an Increase of Sensation; sometimes it is truly scrophulous & sometimes has a Mixture of the common Inflammation. A Fever has sometimes cured Scrophula

and hence we might be led to think that stimulating Remedies are indicated but the Analogy will not hold good, for the Disease is a specific one & will ~~not~~ go on until it has worn itself out, until it has destroyed Life, or is cured by some specific.

Should Lumbar & Hip Abscesses be opened. They are in themselves incurable, possibly a chance of Life may be given to the Patient by opening them early, that is as soon as we are satisfied absorption of the Matter cannot be brought about. In some scrophulous Abscesses we can obtain a real absorption of the Fluid, it is always to be desired, as the healing of them after Ulceration has taken Place is accomplished with Difficulty.

1043. The common pulmonary Consumption is commonly a scrophulous affection of the Lungs.

1044. The young the fair & the delicate are the most subject to it, & the common exciting Cause is cold. it commences with Tubercles in the Lungs. Swelling of the Glands of the Neck often appear in the Beginning; the Disease increases slowly the Tubercles suppurate & Ulceration being formed the Patient becomes hectic & is at length destroyed.

1045. The pulmonary Consumption is however seldom a purely scrophulous affection, it is generally somewhat of the common Inflammation mixed with it, as we know from the Pain in the Chest the quick hard Pulse &c

1046. An Hæmorrhage from the Lungs is not uncommonly the forerunner of a pulmonary consumption, but how far this has to do with Scrophula we cannot determine.

1047. The Testicle is also the seat of Scrophula, as in its Diseases when other Parts, so here also in Which it is scarcely known, but in Progress of [illegible].

1048. It rarely occurs before the Age of sixteen, or in old Age.

1049. The Breasts of Women also fall into this Disease in which they will gradually, slowly with little Pain swell to an enormous Size.

1050. The scrophulous Parts (1047 – 1048) are to be distinguished from Cancers of those Parts by the want of Swelling in the spermatic Chord, and axillary Glands, also by the Absence of local Sympathy, at least until the Skin is beginning to be affected by the Suppuration.

1051. The Indications of Cure in Scrophula with Respect to the Constitution are

A. 1st To give Strength to the System.
2d To counteract the Effects of Climate.
3d The Use of some Specific.

With Respect to a Part

B. 1st To produce Resolution of the Tumor or Absorption of Matter if it have suppurated.
2d To extirpate the Disease if practicable.

1052. The Indication (A 1.) we endeavour to fulfil by Means of Bark & other tonic Remedies.

The Indication (A – 2) by changing the Situation of the Patient; or if that cannot be done by rendering the Sy~~stem~~tem less susceptible of the Influence of the Climate in which the Patient lives.

The Indication, (N 3,) by the Administration & application of such Remedies as Experience has proved.

1053. If Climate cannot be changed, which is to be desired, and which should always be altered to one warmer & more regular, then we may lessen the Susceptibility of the Body by tonic Medicines, Cold bathing & the Use of such cloathing as will maintain on the Surface of the Body an uniform & equable Heat, such as Flannel which conducts the Heat from the Body slowly.

1054. Experience seems to have proved the Power of Sea bathing as the most powerful Specific in every scrophulous Complaint, whether Hip Cases, White Swellings, Consumption &c. Some efficacious Powers are likewise to be attributed to fossile Alkali, Hemlock &c.

1055. Sea bathing is to be used with that Degree of Heat which is found most agreeable to the System & followed by the greatest Increase of Vigor & Spirits.

Q. We consider Sea bathing as a Specific in Scrophula, but we are also to consider under what Circumstances it will act most powerfully, for Instance whether Sea bathing & a cold Bath, Sea bathing & a tepid Bath, Sea bathing & a warm Bath will best agree with the Patient, for we are not only to consider what will cure the specific Disease, but also what will best agree with the Patients Constitution: some Persons cannot bear cold bathing, but will find themselves much refreshed by the tepid Bath; again others require the Heat of the warm Bath to render Salt Water agreeable to their Constitutions. Again the Season of the Year is to be considered, for more additional Heat will be required to be given to the Water in the Winter than in the Summer if the cold Bath cannot be endured. In the warm or tepid Bath, the Patient should remain ten or fifteen Minutes with the Precaution of tempering the Heat to the agreeable Degree. Sea bathing may be employed in all Cases of Scrophula, even pulmonary Consumptions; to prove that the Bath agrees with a Patient he should feel a Glow & his Spirits be enlivened by its Use; if these appearances be wanting after a second or third Trial & the Patient feels himself chilly & enervated, some other Degree of Heat ought to be tried. In bathing, the Sores of the scrophulous Parts should be always uncovered.

1550. The Means recommended, 1552 - 1553. 1554. 1555 are most to be insisted on where there is the greatest Predisposition to the Disease, & the Patient most exposed to the Action of exciting Causes: hence Children & young Persons stand more in Need of them, than those advanced in Life, also in irregular Climates &

in Winter more than in any other [illegible] in Summer. It is a bad Practice with Parents & Nurses to carry young Children about in the Cold, with the Extremities naked & exposed to the Atmosphere; they bear Cold ill & suffer from it more than those advanced in Life.

1057. We are not to expect a speedy Cure from any Remedies even in the Treatment of Scrophula Length of Time being always required ~~being always required~~ to give them Efficacy from three Months to two Years.

1058. Moderate Exercise is to be recommended & perhaps a vegetable Diet may be employed with Advantage.

1059. Mercury is in general improper in scrophulous Complaints; Bleeding is often necessary in scrophulous Consumptions to diminish the Quantity of Blood to be circulated through the pulmonary System & proportion it to the Quantity of unobstructed Lungs.

1060. As to the topical Treatment, where the Disease admits of it & it can be removed with Propriety all at once, Extirpation is the best Method.

1061. In the Resolution of Tumors & the healing of scrophulous Sores few topical Applications except Sea Water & the Juice of Hemlock are of any Advantage.

1062- Stimulating Applications are generally injurious, Violence increases the Extent of the Parts, & at the same Time does not cure but adds to the Disease.

1063. When there is Suppuration, the Abſceſs should not be opened with a Knife in general they should be left to break of themselves.

1064. Variations in Age will often tend to the spontaneous Cure of the Disease, & this is most observable in Females.

1065. In scrophulous Bones, Exfoliation is tedious & obtained with Difficulty: In these as in soft Parts every Proceſs of Exfoliation goes on not without difficulty.

1066. In scrophulous Swellings sometimes only a white curdy or caseous Matter is found; in which the Parts being altered in their Structure & incapable of carrying on their Functions, lose their Life, but do not putrefy, nor is there a Disposition of the Parts immediately in Contact, to throw them off, themselves also being affected by continued Sympathy.

1067. Rickets may be defined

1st. A Want of Disposition in the Veſsels of the Bones to form calcareous Earth arising from Weakneſs of a peculiar Kind, or

2d. Too great & hasty an Absorption of Earth from the Bone in Proportion to the Quantity formed by the Veſsels.

1068. It is a Disease of the Constitution & originates in a Weakneſs of a peculiar Kind; for Weakneſs in general does not produce rickety Complaints, although Rickets are always attended with Weakness. The first Cause, 1067-1, operates in the Production of Rickets in Children; the 2d 1067-7 produces the Disease in Adults.

1069. The Rickets in Children are known by the Bones becoming enlarged, by their bending beneath the incumbent Weight of the Body & yielding to the ordinary Action of the Muscles, so as to be thereby distorted.

1070. A certain Size of the Bones & a certain Proportion of Earth should be present together; as the Size of the Bones is determined in Adults, it is impossible the Increase of the Bones in Size beyond their Proportion of Earth can constitute the Disease in the full grown Subject.

1071 But in Children this is the Case; it is a known Fact that during the Time of Growth the Enlargement of the Bones is the greatest whilst the Quantity of Earth formed in them is the least, for the Formation of Earth checks the Growth of Bones.

1072. The animal Matter of the Bones is also altered, for it is found to be different from the animal Matter of Bones simply deprived of their Earth.

1073. The Rickets cannot produce an increased Growth of Bones in the Adult, but in other Respects, as Softness of the Bones & their Inability to support Weight & muscular Action; though the Causes of Rickets in the Infant & Adult may be different, the Effects will ultimately be the same.

1074. The general Consequences of Rickets in Parts supporting Weight, are, that the Joints are obliged to form more acute Angles.

1075. From what has been observed, we are enabled to understand why the Bones of the inferior Extremities are more frequently bent than those of the superior; & also why those of the superior themselves are sometimes bent & why the Knees are knocked.

1076. Why the Disease affecting the Spine should produce Difficulty of breathing & other Complaints of the Viscera & why the Pelvis should be generally distorted by it, & Labors difficult.

1077. The bending of the Bones & their throwing an Increase of Weight upon the Joints gives Rise to the Stimulus of Necessity, which excites a Disposition in some Parts to take on specific Inflammation & to generate new Bone, hence irregular Exostoses, Anchyloses of the Joints &c.

8. If the Bones of the Cranium have been affected an irregular Ossification may arise in the inside next the Brain, & by its Pressure induce morbid Affections of that Viscus.

On the concave side of incurvated Bones, Nature will sometimes form an additional Quantity of Bone, in Order to strengthen the original one.

Of the Softness of rickety Bones a Case occurred at Lime House, where the Bones were as soft as Tendons.

It is unnecessary to add that Mr. Hunter considers the Mollities Ossium as a Species of Rickets, & that it is here described as Rickets in Adults.

1078. From what has been said we also understand why Bones bend in particular & different Directions.

1079 For the Disease no certain Remedy has yet been found.

1080. The Disease is either a species of or allied to Scrophula, & sea bathing seems to be what approaches nearest to a specific for it, as well as for Scrophula.

1081. The general Indications of Cure are to give Strength to the System; hence the cold Bath, Exercise, Bark, & other Tonics may be advantageously employed

1082. Exostosis has probably somewhat in its Nature similar to Rickets, it is a growing out of a Bone, from a Bone

1083. It appears to be of two Kinds.

1 Constitutional.

2 Local.

In the first a similar Disposition shows itself in almost every Bone, in the latter perhaps only in a single Bone.

1084. It has generally its Seat near the Heads of Bones, & therefore seems much connected with soft Parts.

1085. The Tumor sometimes arises all at once out of the Substance of the Bone, sometimes very gradually.

1086. When near the Joints it sometimes produces Lameness, altering the Direction of the Muscles and Tendons.

1087. It is peculiar to Youth, & rarely appears in the more advanced Stage of Life.

1088 Though we know the absorbents have a Power of removing superfluous Substances, even bony ones, yet we know not of any Medicine whose Powers will either produce a Removal of those Tumors, or a Prevention of them.

1089. When the Removal of the Tumors by mechanical Means is feasible & convenient, it should be done by the Pincers, Chisel or Saw.

1090. Fistulae are of two Kinds.

1st A Passage for the Discharge of Pus &c from a diseased Part.

2d An artificial Canal in Lieu of some natural one, the natural one being obstructed.

1091. It is the Consequence of some Parts being afflicted with Disease, which they are not able to get the better of, although the Fistula itself is seated in a sound Part.

1092. The disease Part to which the Fistula leads, is always larger & more extensive than the Fistula itself.

1093. As the Fistula commonly opens in the Skin, and as the Diseased Parts are more deeply seated the Lips of the Skin will be more tucked inwards, (though sometimes the Lips of the Orifice are turned outwards so as to resemble a Prolapsus Ani) & the Orifice will be nearly filled up with loose fungous Granulations, which if Destroyed readily shoot up again.

094. Whatever is the Disease in the Part to which the Fistula leads untill the Obstruction to its Restoration be removed or its Disposition, if specific or unsound be changed, no Cure will be obtained.

095. If the Seat of the Disease extend to or occupy a vital Part it will tease the Patient and the Constitution untill Hectic is induced & Death succeeds.

096. The Indication of Cure in the first Species of Fistula (1090) will be

1st The Removal of whatever obstructs the healing of the Parts, and

2d The inducing a new Disposition in the diseased Part.

097. The first Indication of Cure will consist in the Removal of all foreign or stimulating Bodies, as Splinters of Bone &c under the Limitations here before given in Cases of Gunshot Wounds & Diseases of Bones.

1099 The second Indication (1096) will be fulfilled by laying open the Fistula or Cavity through its whole Extent, & even carrying Incision into the sound Parts, that the Mouth of the Cavity may be as large or larger than the Surface of its Bottom, and that the whole being exposed, a Necessity for some new Process in Consequence of the Irritation of Exposure may arise.

1100 If the Parts in Question have any Powers of Restoration, the Consequence (1099) this Treatment will be the Excitement of Inflammation, Suppuration & ultimately Granulation, which will at length fill up the unnatural Cavity & cure it.

1101. In the second Species of Fistula the Indication of cure will consist in (1090)

1° In opening again the natural Canal, or

2° In making some new one, which will answer the Purposes of the original one.

1102. In the first Species there is a greater Disposition to heal in the Parts through which the Fistula passes, than in the deeper seated Parts, hence the Disproportion in Size (1091 – 1092 – 1099)

1103. We cannot simply from the Appearance of a fistulous Orifice determine its Extent, we must therefore examine its depth, the Seat and Extent of the Disease, by some convenient Instrument, as a Probe &c

1104. Sometimes one diseased Cavity will have several Openings leading into it; it is generally necessary to lay the whole into one Cavity, & to induce a healing Disposition at the Bottom of that Cavity.

1105. When Fistulae of Parts they lead to are laid open, the external Parts should be kept from healing, untill the deep seated ones have acquired a Disposition for Restoration, & the Ulcer can be healed from the Bottom.

1096. These observations may be better understood by considering

1st. Fistula in Ano.

2d. Fistula in Perineo.

3d. Fistula leading to Joints

4th. Fistula of the Lungs, Liver &c

5th. Fistula Lacrymalis.

6th. Fistula of the Parotid Duct.

7th. Fistula of Cowper's Glands in Females.

1097. Fistula in Ano is the Consequence of Inflammation beginning two, three or nine Inches higher up in the cellular Substance on the outsides of the Rectum, which going on to Suppuration, the Matter descending commonly makes a Point externally near the Anus, & bursts, but sometimes the Rectum becomes so diseased that it will also give Way & a Breach be made in it opposite to where the Inflammation began

1098. The Cure (1099) will consist in laying open the whole Cavity, making its external Mouth equal to or larger than the Surface of any side of the Cavity & preventing the too early Reunion of the Lips of the Wound (1105).

9. A Person had a Fistula in Ano for which he was thrice cut, but the Part still remained fistulous; upon a more accurate Examination it was found that the Sinus extended two inches above the Anus, & then penetrated above the orifice; it continued its Course along the side

of the Gut for another Inch, the Incision was then carried on to the End & the Man got well.

1109. Fistula in Perineo may have for its Cause Stricture in the Urethra, Disease in the Prostate Gland, or membranous Part of the Urethra, the external Orifice cannot heal as long as the Disease remains uncured.

Q. A Fistula in Perineo will not get well though a Wound in the same Part in Lithotomy readily heals, in the latter the internal Parts have not lost their Disposition to healing, hence there is no Obstacle to the Cure.

1110 In Fistula in Perineo there will often be several Sinuses whose Mouths open externally communicating with the fixed Point of the Disease; these it is right to treat if we can according to the Rules given above but before a Cure can be accomplished, the diseased Disposition in the Parts must be changed, for Instance Strictures in the Urethra must be cured if they give Rise to the Fistula.

1111. Fistulæ communicating with Joints will not heal, because they communicate with Parts whose Powers of Restoration are weak, & making free Openings only increases the Disposition to Disease, & the Violence of the Hectic; neither can we cure Fistula of the Lungs or Liver, because we cannot lay open the Cavity.

1112. In Cases, therefore, where we cannot have Recourse to the Treatment recommended, (994) we can only endeavour to give Power to the Constitution by tonic & strengthening Medicines, that if possible a natural Cure, (though little to be expected) may be obtained.

Q. We take no Notice of Amputation for Fistulæ in Joints, as it has Nothing to do with the Doctrines now before us.

1113 Fistula Lachrymalis is sometimes an original local Disease, sometimes a constitutional local, as arising from Syphilis, Scrophula &c.

1114. From whatever Cause the Ductus ad Nasum may become obstructed, whether from Inflammation or a Disposition to contract similar to that which arises in other membranous Canals, as the Urethra &c forming Strictures in it, the Passage of the Lachrymal Fluid is impeded. Distension gives a Stimulus to the Lachrymal Sac, which Stimulus is also increased by the Salts in the Tears, hence Inflammation and Suppuration are produced, & the Matter bursts through the Skin near the Eye.

1115 Through this new & unnatural Opening the purulent Matter mixed with the Tears continues to flow, untill the Surgeon either dilates the natural Canal, or makes a new one, so that the Tears may again have a Passage into the Nostril, & then the Fistula will heal.

1116 If the Obstruction in the natural Passage be very great Dilatation of it will rarely cure, because we cannot in general destroy the Disposition in the Canal to form Strictures, and these recurring, the Disease will also return, so that most commonly a new & artificial Canal into the Nostrils must be formed.

1117. Fistula of the Parotid Gland. The Duct from the Parotid Gland, passing over the Masseter & Buccinator Muscles, consequently lying very superficially is extremely liable to be divided, & the Saliva will flow outward from the End next the Gland; or Suppuration from any Cause whatever arising in the Duct, and bursting externally, a similar Circumstance will take Place.

1119 The Cure is performed by passing a Needle armed with a round Ligature of Thread, from without through the Duct into the Mouth, & let the Thread remain there untill the Wound made by the Needle has lost a Disposition to heal, the external Wound we should suffer & encourage to close.

1120. The Ducts leading from Cowpers Glands to the inner Surface of the Vagina in Women are sometimes obstructed & a Sac will be formed containing a slimy Matter, which will cause a Distension or Enlargement of one of the Labia to a prodigious size & produce the Resemblance of a Hernia.

1121. An Incision should be made into the Tumor & the Matter discharged after which the Incision should be suffered to heal.

1122 Then a second crucial Incision should be made into the Sore, near to the natural opening of the Duct, & this should be kept open untill it has lost its Disposition for healing, & the Mucus is discharged by it, as it formerly was by the natural Passage

1123. Unsound Abscesses are to be considered as two-fold, namely

1. Those forming in a Part.
2. Abscesses of a Part.

1124. In the first we have a collection of Matter formed in the Part where they appear, & in the second the Matter is formed in some other Part more or less distant, & from thence makes its Way to the Part where it appears.

1125. Of the first we have Instances in many scrophulous Suppurations in Abscesses in the Joints &c

1126. Of the second we have Instances in the Psoas Muscle & Hip Joint, which often present their Matter in the Thigh or Groin

1127. Whether the latter burst or be opened the Doctrine of Fistula will apply to them, nor will opening unsound Abscesses of a Part be of Utility unless we can also induce in it a Disposition to heal or we have some foreign Body to remove, as Splinters of Bone &c.

1128. Unsound Abscesses are generally caused by some specific Disposition, as Scrophula, Cancer, Venereal &c, or from a Disposition to Indolence either acquired or natural; that is either in Parts which have natural Powers of healing, but fall into a State of diseased Indolence, or in Parts which have natural but small Powers of healing, as in Cartils, Ligamentous Parts &c

129, New formed Parts as Cicatrices & Calluses are sometimes suddenly falling into the suppurative & ulcerative Dissolution, & the Progress of the Absorption will be uncommonly rapid as this arises from an unsound Disposition in the Constitution: That Disposition is to be removed or altered.

130. We come now to POISONS especially the animal & principally the morbid.

131. But we can give no unexceptionable Definition of Poisons.

132. The Definition, however which we can give & which is most free from Exception is

A Matter which produces a peculiar Mode of Irritation & affects the vital Principle in a peculiar Manner, when even used in the smallest possible Quantity, & this without any Relation to any known Chemical or mechanical Powers, or to any common Irritation.

9. By this Definition Glass, metallic Salts, even Arsenic & a Variety of vegetable Poi-

Cancer or Stramonium Opium &c are excluded from the Class of Poisons, also many particular Kinds of Fish &c for three Reasons.

1st Because these are not Poisonous in the smallest possible Quantity.

2d Because their Action is not universal.

3d Because their Irritation is not specific but common.

1133. We know no Substance in the mineral Kingdom answering to this Description, nor is there much Poison of this Nature in the vegetable but the animal Kingdom possesses it in great Abundance.

1134. No secreted Fluids are Poisonous to the Part secreting them but they will act as Poisons on any other Part of the Animal they belong to.

1135. Poisons answering our Definition 113 are of four Kinds

1st Those which act locally as the Sting of a Wasp, Cancer &c &c

2d Those which have their Effect on the Constitution as Jail Fever, Contagious one &c

3d Those whose Influence is upon the whole nervous System as the Poison of the mad Dog, & Indian poisoned Arrows &c

4th Those whose Powers are mixed as the Poison of the Small Pox Lues venerea &c acting both locally & on the Constitution.

In the animal Kingdom, some Animals as the Bug & Musquito & probably the — poison the Part at the same Time they get their Food from it, the Bug for Instance, poisons the Part & produces an Extravasation of its Juices, which it feeds upon. The Leech after making a Wound poisons the Vessels of the Part wounded, so as almost to destroy their Power of contracting, hence the Hæmorrhage which often continues so long after a Leech has been sucking, which never follows other similar Wounds.

1136. We intend to consider animal Poisons only, and these are of two Kinds namely

1. Natural.

2 Morbid.

1137. The naturally are such as belong originally & naturally to the Animal employing them not depending upon any preternatural Affection or Alteration in the Structure of any Body or its Parts.

1138. The natural has no Power of propagating its Effects beyond the Individual its Powers are exerted in poisoning.

1139. The morbid on the contrary, depends on a preternatural Action or Change of Structure in the Body communicating.

1140. But the morbid, in general, may be communicated by the Body poisoned to other Bodies & therefore may be propagated to many Individuals, because the Individual poisoned communicates the same Power of poisoning others as the Animal affected by which he was poisoned.

1141. Some of the natural act locally only as the Wasp, others both locally & constitutionally as the Viper, Rattlesnake &c.

1142. Those acting on the Constitution generally first produce local Effects before they are absorbed & affect the System.

1143. Pain in the Part receiving the Poison red Streaks & swellings of the lymphatic Glands, in the Course of Absorption are sometimes Preludes to Rigors, Convulsions, general livid Extravasations, swelling of the whole Body & Death.

1144. Inflammation is produced in the Part of the adhesive Kind & the Parts swell which rarely terminates in Suppuration, though sometimes Pus is formed.

1145. The Pus is of the common Kind, when it does form & it contains no Poison, whereas in Suppuration takes Place in the morbid Poisons, the Pus itself is poisonous.

1146. All the natural Poisons must come in Contact with the Part to poison it, some require to be inserted by a Wound in order that their Influence may be exerted.

1147. Morbid Poisons probably, all arose at first from a diseased State of the Body or of Parts.

1148. Many are obliged to the Power of Conta mination for their Continuance, & that these being destroyed, they would cease to be renewed.

1149) In what they differ from the natural has been already shewn, they are, like the natural communicated by Contact some of them in a State of Vapor.

1150. Those which arise spontaneously, seem to be confined to the Species of Animals, in which they arise, as a Cancer, Syphilis &c which are peculiar to the human Species, & cannot be communicated to any other Animal.

1151. Morbid Poisons applied to animal Bodies have specific Distances of Time between the Time of applying the Poison & the Time of its producing Irritation.

Dr. W. Hunter suspects the venereal Poison militates a little against the general Definition of Poisons, in that he imagines its Action depends in some Measure on the Quantity applied.

Small Pox by Inoculation between the Time of its application & the Time of its visible Irritation requires two or three Days.

Natural Small Pox twenty three Days; Measles nine Days; Cancer some Months; Itch not ascertained.

1152. The natural Poisons do not in general produce extensive local Sympathy.

1153. Morbid Poison being applied to a Part, that Part becomes infected & diseased, without a Power of contaminating other Parts by Means of the Absorbents as in the Pox. &c

1154. Morbid Poisons being applied to a Part, the Part becomes diseased, & has a Power of communicating the Disease to other Parts by Means of the Absorbents, but not to the Constitution as the Venereal &c.

1155. When a Part has the Power of contaminating the System, as the Small Pox.

1156. Of the Action of some Poisons as Small Pox Measles &c the Constitution is susceptible only once in the Course of Life; of others it may have the Action repeated.

1157. CANCER is a Disease produced by a morbid Poison arising spontaneously in a Part, without our being able to account for the Manner in which it is generated.

1158. It is a local Disease, which may produce a consequent similar local Disease in another Part; but has never the Power of affecting the Constitution.

1159. Some Parts are more liable to the Affection produced from different Poisons than others; so the secretory Glands are most commonly the Seat of Cancer, the Breast & Uterus in Women the Lips, external Nose, Pancreas Pylorus and Testicles are commonly seized with this Disease.

1160. It is a Poison of whose Action the human Species are ~~only~~ alone susceptible; Experiments have shewn us that it cannot be communicated to other Species of Animals.

1161. We find in Parts affected with Cancer an indurated knotty Feel, with a Kind of Suppuration in the Centre or an Ulceration of the external Surface attended with Pain.

1162 Previous to a Disposition to Ulceration being formed, the Pain is dull & heavy, but this Disposition being produced, the Pain becomes violent, giving a shooting burning Sensation.

1163. The Part affected has its Functions destroyed. If a secretory Organ, it loses entirely the Power of Secretion.

1164. In the suppurating Process, the Cancer becomes adherent to the surrounding Parts, the Skin becomes discoloured, smooth & shining & Matter is formed, sometimes without much previous Inflammation.

1165. When the Cancer is cut into, previous to Ulceration having taken Place, there is sometimes found the Appearance of a Cyst, which contains an ill conditioned Serum, Blood, curdy Matter &c but seldom or never Matter resembling good Pus.

1166 The Process of Cancer in all its States and Stages is generally slow.

1167. When ulcerative Absorption has taken Place, the Integuments round the Ulcer are tight and rigid, the Skin is tucked in at the Edges, and wrinkled into Folds, an ill conditioned Matter is discharged.

1168. The Lymphatic Glands in the Neighbourhood become indurated & enlarged, sometimes soon, sometimes even before the Ulceration has taken Place, and little Lumps are sometimes formed in the circumjacent Skin.

1169. It has a Power of poisoning other Parts, and of producing in them a similar Disease but it has no Power of contaminating the Constitution.

9. We may infer that cancerous Virus has no Power of affecting the Blood, or producing similar Diseases in any Part by Means of the Blood.

The Reason why cancerous Matter should not be able to act upon the System when absorbed, may be, that it is so slow in producing its Action, that Time cannot be sufficient for that Purpose after its being absorbed, before it is thrown out of the Body.

1170. A Cancer of one Part may produce sympathetic Swellings of other Parts, but not true Cancer, unless of Parts which are in the Course of Absorption.

1171. Constitutional Effects as hectic Fever &c may arise in Consequence of a Patients labouring under a Cancer, from the Irritation the Disease produces; but the Affection of the Constitution will be only that common to simple Irritation, nor will there be any Thing specific or peculiar in the Manner in which cancerous Irritation acts upon the System.

1172. The Time of Life seems to be the principle predisponent Cause of Cancer the Age which most strongly predisposes is from 40 to 60; it sometimes, however, appears earlier, though rarely.

1173. The exciting Cause

1174 The Parts most susceptible of the cancerous Disposition seem to be those proper to the Sexes.

1175. Women are more susceptible of the cancerous Disposition than Men, probably because they have more Parts peculiar to the Sex.

1176. Is there not another Cause in the Parts peculiar to the Sex in Women, at the [illegible] Time of Life [illegible] a Change which renders them unfit for Generation?

1177. We know of no Medicine which will cure a Cancer

1178. Arsenic is probably a specific for the cancerous Disposition, but its Powers are too weak to produce a Cure, nor will the System allow this to be introduced in sufficient Quantity.

1179. But a Cancer, if left to itself always kills, either by its constant Irritation exhausting the Principle of Life, or by producing continued or contiguous Sympathy, & thereby inducing a similar Diseased Affection in some Part necessary to Life.

1180. Therefore Extirpation of the diseased Part is always to be desired & if practicable, is always to be performed before a consequent cancerous Affection has taken Place in any other Part.

1181. We are always to consider not only the original or first formed Cancer but also every Part which may have been poisoned by Matter absorbed from it & which we call the consequent cancerous Affection.

1182. Nor can we be always certain that a consequent Cancer is not formed because Ulceration & the Formation of cancerous Matter have not taken Place. for

1183. Coagulable Lymph, which had been extrava sited in the thickening & Induration, if absorbed, will equally contaminate and poison the Parts it is applied to, for whatever the Fluid secreted in a Part may be, it will always possess the Specific Properties of the Part, from which it is secreted.

1184. The consequent Affection begins either in the Lymphatic Glands or the Lymphatics themselves, but a Cancer once formed, whether original or consequent, there is no Part contiguous to which it may not extend its Action even to Bone.

1185. Hence Cancers should always be extirpated as early as possible, the earlier they are removed the fairer Prospect there is for the Patient's future health.

1186. Previous to Extirpation it is always necessary to observe

a The common Rules laid down touching the Extirpation of Tumors.

b Whether any consequent be formed & where.

c Though no consequent Cancer be visible whether there be just Reason to believe a Disposition for one is any where formed.

1187. In Extirpation it must be an invariable Rule to take away the whole of the Disease.

1189. If the whole of the Disease cannot be removed Extirpation is not to be attempted.

1190. If the Tumor adhere to the Skin, it should always be a Rule to remove more Skin than the diseased Part is adhering to, that if possible no may be sure not only of taking away any Part in which it is probable from its Contiguity, that a Disposition for a consequent Cancer may be formed.

1191. The consequent, if left, will be equally injurious & equally fatal with the original Cancer & though the original be taken away, will itself contaminate other Parts, in the same Manner & in the same Degree as the original, & is equally incurable by any Powers of Medicine.

1193. Notwithstanding all our Care, the Disease will sometimes appear again, even after we have removed all evidently diseased Parts & those also which we were justified in suspecting.

1194. For the Slowness with which the cancerous Virus sometimes acts may be a Cause of deceiving us; a Disposition to a consequent Disease may be formed in some Part, which we can by no Signs whatever ascertain the Existence of.

1195. Nevertheless when the Operation is admissible, we ought always to endeavour at the Extirpation of a Cancer.

1196. Cancer must be distinguished from Scrophula, & from indolent thickenings of all Kinds, which may be done not only from its Appearance, Pain &c but also from its acting as a Poison on the neighbouring Parts, which Scrophula & simply indolent thickenings never do.

1197. It should always be distinguished from the fungated sore, which though it is not a Poison as it has already been considered as cancerous, may not improperly be noticed in this Place.

1198. The fungated Sore is a specific Disease, entirely local & has no Power of contaminating or poisoning Parts, beyond the Extent of continued Sympathy & even this not widely diffused.

1199. It has its Seat in every Part of the Body without Exception.

1200. It begins in a circumscribed Tumor, partly solid or encysted, is not for a Time very painful, it gradually & not very hastily enlarges the Skin, becomes discolored, & at length bursts and ulcerates.

1201. A loose spongy Fungus of the Color of dark Cruor is then thrown out which rises & enlarges faster than Escharotics can take it down, it bleeds easily from the Surface of the Fungus, & its Pain is acute.

1202. It resembles Cancer in being absolutely incurable by Medicine & if left to itself is destructive

1203. But it differs from Cancer in not being poisonous, & in never producing either in the Lymphatics or Lymphatic Glands a similar Affection,

1204. The Disease kills without seeming to have done so much Mischief as might be supposed admissible without Destruction of Life

1205. Nothing can be done to relieve the Patient but Extirpation in which we should be ex namely careful to remove every Atom of Disease, otherwise the Part will again take on the same Affection.

1206. Many diseased Appearances on the Face which have been considered as cancerous, are only phagedenic Sores.

1207. In the Extirpation of Cancer two Methods have been employed namely

1st The Knife or Excision.

2d The Use of such Means as produce the Death of the whole of the diseased Parts, & the subsequent Separation of them from the sound Parts.

1208. Diseased as well as newformed Parts have much less Power of preserving Life & resisting Death, than sound Parts hence we can conceive how the Application of Arsenic to Cancers shall sometimes produce the Destruction of the whole of the Part labouring under Cancer, without depriving the circumjacent Parts of Life.

1209. Chemical Applications, as the different Caustics, have also been employed, but the Powers of Arsenic are the greatest. the Caustics making less Distinction in their Action between the sound & unsound Parts, the latter acting chemically, Arsenic by its Irritation, & exciting an Action under which the diseased Parts have not strength to subsist.

1210 If we employ the Knife, we should always

cut into sound Parts in general we can employ
the Knife more universally than the other Means.

1211. If we should in the Course of the Cure of the
Ulcer, after the Operation, observe any Lumps a-
gain, or any consequent Cancer appear, it ought
to remove them as soon as Discovered.

1212 If a cancerous Disposition remain after the
Operation, the Wound either will not heal, or
the Cicatrix will soon ulcerate afresh, or the
consequent Disease will make its Appearance.

1213. It is necessary to take Notice of some cancer-
ous Affections of particular Parts.

1214. Cancer of the Breast mostly begins in a small
indolent Lump which is in general circumscrib'd,
but at other times it begins with a Discharge of
Blood, or a Fluid of Matter from the Nipple, some
times the skin becomes diseased very early being
[illegible] brown & discoloured.

1215. The natural Function of the Breast is destroyed
so that the Power of secreting Milk is [illegible]

1216. It should be ascertained whether there is any
adhesion of the Breast to the pectoral Muscle
or Ribs, & before the Glands in the Axilla become
affected, or at least before these Circumstances
take Place in any great Degree.

1217 We must be cautious in examining these.
Axillary Glands sometimes when enlarged, they may
seem moveable, but when we come to examine
we find them a Chain of little diseased Glands.

extending beyond the Reach of the Knife & rendering our Endeavours fruitless.

1218. If the Cancer of the Breast be suffered to become irremediable, the Ulceration increases, with a Stiffness & Tightness of the surrounding Parts; the Breathing becomes affected & is difficult & laborious.

1219. The Axillary Glands being universally & greatly enlarged the Return of the Lymph from the arm is obstructed hence an Oedema of the whole Arm, sometimes hard sometimes soft, takes Place.

1220. In some Patients the Integuments on that Side of the Body will become oedematous & even a paralytic Affection of that side of the Body on which the Disease is situated may ensue.

1221. Contiguous Cancers will be formed, but at length the Patient being worn out for want of Sleep with Pain & Hectic from the constant Irritation, until at length she sinks [illegible] worn out by her Sufferings.

1222. In this as in all other cancerous Affections the liberal & unlimited Use of Opium is to be permitted.

1223. If Cancer be seated in the Testicle, it should be removed before the Spermatic Chord is thickened, or at least when so much of it is apparent & undiseased without the abdominal Ring, as to leave Room for the Performance of

Extirpation & then we are justified in operating
though the Success is uncertain.

1224. In the Cancer of the Testis the Return is
more unsuccessful than in the Breast, with re-
gard to the Extirpation & the Administration of
Opium the Rules given will apply.

1225. In the Cancer of the Testis the consequent
Disease will be in the Glands within the Ab-
domen, the Vessels pursuing its Course.

1226. If the Scrotum be the Seat of Cancer the
consequent Disease will be in the inguinal
Glands.

1227. In the Lips, the Disease begins with a thick-
ning, it is to be removed by the Excision of the
whole Lip, in other Respects the preceding general
Rules must be observed.

1228. It is not necessary to dwell on the particular
Cancers of other Parts as the Eye the Nose
the Uterus &c. Extirpation when practicable the
should be early employed, when impracticable
means of alleviating Pain can commonly be had
Recourse to.

1230. The Itch is a specific Disease produced by
a contagious Poison which being applied to the Skin
occasions an Ulceration in it.

1231. The Itch is contagious the Person infected
with it being always able to communicate it to
others in the same Manner as he received it.

1232. Contact of Parts is necessary, [illegible] matter is in a State of Vapor, it has no Powers of Contagion, & its Powers of infecting are very weak & easily guarded against.

1233. Animalcules may exist in the Matter, but not necessarily or universally.

1234. Continued Sympathy produced by it is very little & contiguous Sympathy hardly ever takes Place, from its Action it has no Power of poisoning the System nor have the Absorbents ever been seen to be affected by it.

1235. Its most ordinary Seat is where the Cuticle is thin, its first appearance is a small Vesicle containing a little Fluid, to this succeeds an Ulcer discharging Pus, which in the recent State is very minute, but when of some standing considerably increases in Breadth, so as to be some times as large as a Sixpence.

1236. The little Ulcers made by the Itch never heal spontaneously, & when healed by Art they do not again break out, nor do other Ulcerations arise in the surrounding Skin.

1237. Its Power of irritation is not very considerable, the Surface of the Body must be heated to be sensible of its Irritation; the Sensation of uneasiness is Itching not Pain.

1238. Different Remedies are found to be specifics for the Itch, Sulphur, Hellebore, Mercury externally used are known to cure it but Sulphur Ointment seems to be the most pow-

1039. A mercurial Girdle has been known to cure the Disease, even when mercurial Ointment applied to the skin has failed; Brimstone taken internally will sometimes produce a Cure.

The VENEREAL DISEASE.

1240. The Venereal Disease is one of the morbid animal Poisons & like other morbid animal Poisons may be communicated by the Persons infected to others.

1241. It is always communicated in the Form of or united with purulent Matter which shews that it originally arises from Inflammation.

1242. When communicated to a Part, it produces in general Inflammation but its Progress is attended with Symptoms peculiar to itself & distinct from those of other animal Poisons.

1243. The Presence of Inflammation is not, however, necessary to its Existence, an infected Person may communicate it to others after all Inflammation has left him, as in the Case of a venereal Gleet.

P. Men who have a Gleet after all Inflammation is gone off may infect Women & Women Men.

1244 To produce Infection the venereal Matter must be communicated in a fluid State or in a State rendered immediately fluid by the Juices of the receiving Part, in the Form of a Vapour it cannot infect nor can it be communicated without the Presence of purulent Matter. (1241)

1245. The Poison first arose probably in the genital Parts in the Intercourse between the Sexes this Intercourse is not however necessary, it may be communicated from other Parts besides the Genitals, & even when applied by other Substances than living Bodies.

q. A Gentleman by passing a Bougie that had been for months used by him, when he had a Clap, caught a Gonorrhoea.

1246. Actual Contact with the Parts is however always necessary.

1247. Venereal Matter applied to sound Parts has generally the Effect of producing Inflammation, which is always of a specific Kind.

q. Mr. Hunter has sometimes known Gonorrhoea arise without any preceding Inflammation, & confessed himself very much puzzled concerning the Nature of such a Case, if it were venereal, it should seem this Aphorism will not universally hold good.

1248. From what has been said it is evident those Parts which are not naturally or accidentally secreting Surfaces, cannot communicate the venereal Disease.

1249. It may affect the Body either locally or universally, & therefore may be divided into two Genera, namely

1st Genus — original or immediately local.
2d Genus — Constitutional.

1250. The first Genus has two Species, seemingly different, yet their ultimate Effect is the same.

1st. Without Ulceration or a Breach in the Solids, called a Clap or Gonorrhoea.

2d. With a Breach in the Solids, or Solution of Continuity, called a Chancre.

1251. The Bubo, or local Consequent, may follow either the first or the second Species of the first Genus, & when suppurating differs in Nothing from the Chancre, except the Size.

1252. When the infecting Matter is applied to a secreting Surface, the first species will be produced; when to a nonsecreting Surface, as the Skin covered with the Cuticle, the second species will arise; from either of these a Gland in the Line of Absorption being affected, the Bubo or local consequent will be brought on.

1253. All secreting Surfaces in the human Body having nearly the same Mode of Action, will take up the Infection from simple Contact, & may any, or either of them, be the Seat of the Disease of the first species.

1254. The second Species may be induced

a By a Wound.

b By Application of the Matter to the cuticle.

c By Application of the Matter to a Sore.

1255. secreting Surfaces being natural as that of the Urethra, Vagina &c or accidental as an Ulcer whenever the venereal Matter is applied to them increase their Secretion to wash away the offending Matter.

1256. But the further Consequence of the Application of venereal Matter to the natural and accidental secreting Surfaces will be different. In the former it will in general only change the Nature of the secreting Fluid from the other & will first increase the Quantity of Secretion & then produce it for a Time, a Gonorrhoea of the one. It will change the Nature of the Sore from a common one to a venereal one & then the Disposition to ulcerate will increase & the Sore be in every Respect converted into a Chancre, or the second Species.

1257. Whenever a Part becomes infected with the venereal Virus, it takes on a new Action, if it be a secreting a fine cuticular Surface as above described the Nature of the Secretion will be changed, if a nonsecreting Surface the ulcerative Absorption of the Part will come on & the Sore will be secreted.

1258. Some secreting Surfaces seem more susceptible of the venereal Irritation than others the Urethra seems eminently distinguished to take it on.

1259. Absorption of extraneous Matter always goes on more readily from an Ulcer than from a fresh Wound or from a Canal it must be evident that the local consequent must more readily & frequently arise from the first than from the second Species

1260 The venereal Poison will be always the same in Point of Strength, tho' it may indeed at one Time be diluted through a larger Quantity of Fluids than at another, and it will produce the Effects of a Poison in the smallest possible Quantity.

1261. But it produces different Effects in different Subjects, in some it will cause the most violent in others the mildest affections, this therefore evident that the susceptibilities of different Persons of its Irritation, must be very different.

1262. This (1261) will not be easily explained, for the susceptibility of venereal Irritation will not be in Proportion to the susceptibility of other Irritations.

E. A Gentleman had Chancres many Times, they always healed very readily, but the slightest Scratch from any Accident he received was very difficult to heal; so that some are very susceptible of this specific or venereal Irritation, tho' highly so of any other Irritation.

1263. The local consequent will differ Nothing either in its Nature or its ultimate Effects from the original local, having the same Power of poisoning other Parts, or the Constitution & the Matter secreted in it being equally infectious, as that of the first or second Species he first Genus.

1264. A natural secreting Surface cannot be ~~long~~ affected with this Poison, longer than a certain Time, for had it a Power of keeping up a specific Action in the Part longer than a certain Time, the Duration of the Disease would be endless, for fresh Matter being continually secreting would be the Cause of a still farther Secretion of similar Matter & so on ad infinitum for it would still continue its secretory Action.

Q. Parts lose their Sensibility of the Stimuli applied to them in the Urethra the Nature of the Solids is not changed but only the Mode of Secretion; now in Process of Time the Membranes becomes habituated to the Presence of the venereal Matter & is then no longer sensible of its Stimulus which can now no more produce the specific Disease & therefore the Disease decays, and a natural cure takes Place, see Note 1265.

1255. We are induced to believe this to be the case from knowing

1st That all Gonorrhoeas are cured without any specific Remedies.

2d That a secreting Surface will retain some real Matter after Inflammation is gone off, & also a Power of poisoning other Parts, for a considerable Length of Time, without being sensible of the Presence of venereal Matter, or undergoing any morbid Affection from its remaining in contact with it.

3.d That the Application of fresh venereal Matter may be made to the secreting Surface in Question, without increasing the present Disease or even retarding the Cure.

4. When we consider the different Methods different people have of curing the Gonorrhoea & that all are successful, many of which cannot have any specific Action upon the Part, we may readily suppose in general the Complaint goes off of itself.

Cases.

1 A married Man during several Years had known no other Woman but his Wife, he at length lay with a Woman of the Town & caught a severe Clap; the Woman who gave it him was not sensible herself of any Ailment, she continued her Connection with him for many Months without perceiving any Change. She then formed a new Connection & gave a Gonorrhoea to her second Lover; she had no [illegible] however of the Disease herself; he continued his Intercourse with her for some Time but notwithstanding got cured the while, at length the first Lover returned, had Connection with her but once & she clapped him again.

2.d A Gentleman kept a Mistress, who becoming clapped left him, she was taken into the Magdalen, where she was apparently cured; she continued in the Hospital near two Years, seemingly well & when discharged was picked up again immediately on her Dismission by the Gentleman who had formerly kept her to whom she nevertheless gave a severe Gonorrhoea; he continued however to cohabit with her & got quite well without interruption to his Connection, which at last he broke off. A married Gentleman in the City took her into keeping & was immediately clapped by her. he was likewise cured though he continued the Intercourse with her during the Cure; his Mistress however left him & returned to her former Lover whom she clapped the second Time.

These Histories abundantly serve to prove what has been advanced, many more of the same Kind might be adduced; moreover if the venereal Matter of a Gonorrhoea or a Chancre be applied to a Bubo, or that of a Bubo to a Chancre, it will not in the least increase the Disease or retard the Cure.

If a Man continue to be intimate with a Woman who has clapped him & if he be cured & she not, still he will not receive a fresh Infection, provided he continues to cohabit with her, but if he absent himself from her for some Time, that is, untill his genital Parts have recovered themselves, & as it were lost the Recollection of the venereal Stimulus, he will then get a fresh Gonorrhoea.

This in some measure depends upon the Force of Habit, for being long accustomed to the Stimulus of venereal Virus the Parts lose their Sensibility of it, & cannot be irritated by it; thus in general if a Man get several successive Claps, the first will be the severest, & they will become slighter & lighter every Time: Was a Man once supposed to continue during his Cure & ever so long afterwards his Intercourse with venereal Women, it is extremely probable he would find it impossible to contract a fresh venereal Gonorrhoea (See Habit 98 &c,

1266 But this natural Decay of the specific morbid Action & spontaneous Cure will only arise in natural secreting Surfaces; whenever a Chancre or venereal Ulcer has formed, no natural or spontaneous cure is ever effected, but the Disease continues increasing in Violence, until it is cured by Art.

1267. The Matter of a Gonorrhoea & Chancre is exactly similar & equally capable of poisoning other Parts.

A Gonorrhoea will produce in the same Person a Chancre, or a Chancre a Gonorrhoea & both or either of them may produce a constitutional Disease; in general when the Chancre appears, the Gonorrhoea goes off & frequently the Gonorrhoea appearing the Chancre will go off

It should therefore appear that one Irritation cures the other, the two Parts sympathizing with each other.

1268. It is extremely difficult to decide when the Power of Contamination is entirely lost; Persons sometimes retain a Power of communicating the Disease after not only Inflammation but even the Discharge has seemingly disappeared.

1269. If the venereal Poison be applied to a fresh Wound or by Means of any Wound Suppuration must in general take Place first before it can produce any Effects upon the Body.

1270. The Discharge from a Gonorrhoea is purulent, but is very rarely attended with any Ulceration of the Urethra.

Were the Pus discharged from Ulcers in the Urethra, the Gonorrhoea would not be cured without Mercury, which we know is by no Means the Case.

1271. The local consequent or Bubo sometimes neither suppurates nor goes off by Resolution, but becomes indolent & will frequently remain in that State, notwithstanding the Use of the most powerful Remedies.

1272. Not only different Persons will be affected by the venereal Virus in different Degrees of Violence, &c., but the same Remark will hold good in Respect to the different Parts of the same Patient's Body.

C. We have seen a Chancre healing, [illegible] [illegible] form & he afterwards infected a [illegible] which was many Months & very difficult to remove.

1273. The second Species or constitutional, takes Place when the venereal Virus is absorbed & carried into the Circulation.

1274. It may be communicated to the Constitution by Means either of Gonorrhoea or Chancre, sometimes though rarely from venereal Matter being applied to the Surface of the Body without Ulceration having previously taken Place, & sometimes from Application of it to an Ulcer, without producing any Change, but these two latter Modes of Infection are very unfrequent.

1275. It may also be introduced into the System by poisoning a Wound, but there it must first produce Inflammation, in the same Manner as inoculated Small Pox must produce Inflammation & Suppuration in the Place of the Incision before the Constitution becomes infected.

1276. The venereal Virus will not act as a Poison applied to some Parts of the Body, it will have no Effect upon the Stomach, as has been proved by Experiment.

C. A Boy of eight Years of Age, swallowed some Milk & Water in which some Chancres had been washed, with Impunity. A Lady also drank by Mistake a Bason of Milk & Water, in which a Gentleman had washed his Chancres, it was near eight Hours after before she took an Emetic, yet no bad Consequence ensued.

1277. The venereal Virus cannot be taken in by the Breath, Sweat, Saliva, Milk, or any other natural Secretion of a Person labouring under the Disease in its worst State.

1278. When the venereal Virus is absorbed into the Circulation, it produces no Change in the ~~Circulation~~ Blood, but has a Power of producing local Effects in different Parts of the Body, as Blotches, Ulcers, Nodes &c but it is certain the venereal Matter undergoes some Change, as the Ulcers &c so produced, that is from the Constitution, have no poisonous Quality; the Matter from a venereal constitutional Ulcer will not communicate venereal Infection, nor will it differ in its Powers from the Matter of common Ulcers.

1279. The Blood, although the Matter has been absorbed into the Circulation, will not communicate the Disease to a second Person, nor are any of the Secretions of a Patient labouring under the second Genus, any Ways infectious.

1280. The venereal Virus then can never be communicated except from a Part that labours under the first Genus, or has an original local Complaint.

1281. It must be from hence evident that the Opinion that an infected Child, unless it has its Mouth or Lips originally infected, cannot communicate the Disease to its Nurse nor can the Milk of an infected Nurse communicate the Disease to the Child.

Q. A Nurses Breast inflamed & suppurated, after suckling a Child who had lately died; a Physician gave it as his Opinion that the Lues was universal & that she had been giving Suck to a poxed Child: but the Event of the Case contradicted him; Mercury did not mend the State of the Sore, indeed new Sores broke out upon her Breast while she was taking it, at length she left off the Mercury, & recovered by good Diet & Country Air.

1282. We almost believe that a Child in Utero is never poxed, it may receive the Infection, in its Passage through the Vagina & & thus it may be locally & in the End universally affected.

Q. It has been supposed that if a pregnant Woman be poxed, the Infant in Utero must partake of the Disease, if ever this be the Case it can only happen from the original Matter, from a Sore being conveyed unaltered to the Child which is what we can hardly conceive to happen.

1283. Many anomalous morbid Appearances resemble the venereal Disease, from which it is by no Means easy to distinguish it by the Eye.

1284. The only unequivocal Criteria for distinguishing the one from the other, are

1st. No venereal Eruption, Blotch, Ulcer, or other Affection, Gonorrhoea excepted whether originally local or constitutional, ever disappears or is cured without the Operation of Mercury its specific Remedy.

2d. No Eruption, Blotch, or other Affection that is truly venereal will appear while the Constitution is under the Influence of Mercury.

1285. The same Person may have an original local & constitutional Disease at the same Time. Of the first Genus the Person may have both the first & second Species at once, & the first Species or Gonorrhoea may be cured, the Chancre or second Species remaining notwithstanding & vice versâ.

1286. So either or both Species of the first Genus may exist together with the second or constitutional, & either or both Gonorrhoea or Chancre may be cured without the Removal of the constitutional Disease

1287. But the Chancre will not remain uncured when the second Genus is cured, although the Gonorrhoea will yet continue to exist.

1288. The constitutional as above noted, almost always arises from some Species of the first Genus, but the Chancre or Gonorrhoea does not at all become altered, or have its Action awakened by poxing the Constitution (1285).

1289. The specific local Diseases have all their specific Distance for Action, which they do not exceed;

so also the venereal Disease has its specific Distance for local Action; this is however not always of the same Extent, being sometimes affecting a small Space, sometimes a larger one, it is, however, always circumscribed, but when it spreads more widely than common, it has always a Mixture of the erysipelatous.

1290. The venereal Disease is peculiar to the human Species, other Animals not being susceptible of its Irritation.

Q. Mr Hunter has proved this by a Number of Experiments on the Dog, the Ass, the Rabbit &c by soaking Lint in venereal Matter from Gonorrhoea and Chancres & introducing it into the Vagina &c.

1291. Does the venereal Disease produce its Effects by Fermentation, or by producing a peculiar Action in the Solids? The Question is not easily determined.

1292. A Man who has got a Pox, may notwithstanding get a Chancre or Gonorrhoea without increasing the Pox; it is evident then that when the Habit is once infected with the venereal Poison, it cannot receive any Addition from the Absorption of fresh venereal Matter.

1293. Many Diseases may imitate the Appearance of venereal, but they arise, heal & break out again; a local Disease from a Pox never disappears untill it is cured; this then differs from other Poisons, never wearing itself out nor ever suffering the Part to make a Progress towards a Cure.

4. A Gentleman had Blotches in his Face which resembled venereal ones, & had been deemed so by many medical Men; he had also Blotches in his Legs & Thighs; they continued for six Months, several of them having got well during that Time & others broken out notwithstanding the Use of Mercury; He at Length consulted Mr. Hunter who judging of them according to his Idea advanced in the Text, assured him they were not venereal & advised him to leave off Medicines, to live well, though temperately, & bathe in the Sea if he chose; in a few Weeks he lost his Complaints.

A Nobleman labouring under some Complaints which appeared to be venereal, & which those who attended him assured him were so consulted Mr. Hunter; he was with much Difficulty persuaded to leave off Medicines & take a Sea Voyage, to change the Air; he followed this Advice & was cured.

When any Diseases affect the genital Parts, they are generally considered as venereal, but Gonorrhea Sores on the Glans Penis, Buboes may arise without any venereal Infection; moreover there may be a Variety of the morbid Appearances that take Place in the constitutional Disease or second Genus, which are common also to other Diseases; Swellings of the Bones, Blotches &c may be produced by other Diseases; we are not therefore, hastily, to determine whether a Disease be venereal or not, but together with observing Appearances informe ourselves also of the History of the Complaint previously.

1294. When the venereal Virus has been absorbed into the System, it has in itself no particular Tendency to produce Affections of one Part more than another, but from some Peculiarities in different Parts of the Body themselves, some Parts will be more susceptible of the venereal Irritation than others, & of course take on the venereal Action soonest.

1295. One Cause which disposes Parts to take on venereal Action readily is Exposure to Cold, therefore it makes its Appearance in the more external Parts of the Body first; this reasoning is strengthened by observing

1296. That the Disease is found to prove much more speedy as well as much more violent in its Action in cold than in warm Climates, in the latter it rarely arises to any great Violence.

1297. The Parts first in Order of Susceptibility are

- a The Skin.
- b The inside of the Mouth & Throat, and
- c The Tonsils.

1298. The Parts second in Order of Susceptibility are

- a The Periosteum.
- b The Fascia.
- c The Bones.

1299. The Bones seem the more susceptible of it the harder they are, & the nearer the Surface of the Body consequently the more exposed to the Action of Cold.

9. Thus the Tibia being of all Bones, most exposed to the Action of Cold, is oftener than others more frequently affected; it may be expected that the Tibia is naturally earlier than many Parts, which take on the Disease before it; but we know whatever Dispositions are formed in Bones, they come into Action much more slowly than the soft Parts.

1300. Many of the internal Parts are not liable (as far as Experience has proved) to the venereal Disease, as the Brain, the Stomach, the Liver &c

9. They are either not susceptible of the venereal Irritation, or else they never come into the venereal Action, before the Disease is totally cured.

1301. The Lungs are sometimes the Seat of the venereal Disease, although they are late in coming into Action, perhaps their Susceptibility of this Irritation depends upon their being in some Measure an external Part.

1302. The venereal Matter when taken into the Constitution, does not long continue in the Circulation but produces its Action on the Parts susceptible of the Disease, & is then thrown off by some of the Secretions, as any other extraneous Matter.

1303. It does not long continue circulating in the

System, we know this because the Parts first in Order may be cured, & the Parts second in Order still remain uncured; yet the first Parts will not again take on the diseased Action; now were the venereal Matter still circulating in the Blood there would be no Reason why the Parts first in Order, should not again fall into Disease.

q. Thus if a Man with venereal Blotches and also diseased Bones be put under a Course of Mercury, the Disease of the Skin may be cured, that of the Bones remaining notwithstanding. The dis:eased Action of the Bones may continue to go on if he leaves off Mercury but the Disease will not appear again upon the Skin.

1304. Dispositions once formed will go on to Action, though some Time may elapse before that Action appears; see 167. Parts having received the venereal Taint, will if left to themselves always go on to diseased Action, although the Distance of Time may be considerable.

1305. Hence we may understand how many Parts of the different Bodies may be contaminated at the same Time, but their diseased Appearance may take Place at different Times

1306. Those Parts which most readily fall into the specific Action, are the first in going through a cure

q. When a Part has received a strong Disposition for Action, a Cure sometimes cannot be effected untill that Disposition has actually gone

A Man might suppose that those Parts which are most susceptible of the venereal Irritation would in the advanced stage of the Disease suffer the most violently, but this is not the Case, a Part having gone fully into Action, loses the susceptibility of the Irritation which it has at first.

1307. As a further Proof that the venereal Matter becomes altered when taken into the Constitution we may observe that a venereal constitutional Ulcer on the Application of venereal Matter from originally & locally diseased Parts will catch a Gonorrhoea & so take on the Action of an original Sore, now the Matter of one constitutional Sore will not irritate another constitutional Sore.

1308. If the Matter of a Gonorrhoea be applied to a Chancre it will produce no new Effect & vice versa.

Again the Matter of one originally local Sore or Chancre, will not irritate another Chancre.

1309. A Part which has lately been under the Irritation of venereal Matter, will not readily take on the same diseased Affection again.

Ex. A Man who has a Gleet though he has Connection with a venereal Woman, will not catch a fresh Gonorrhoea.

1310. The Seat of the first Species of the first Genus in Man is the Urethra, the Surface of the Glans

Penis, the internal Surface of the Praeputium.

1311. Its Attack on the Prepuce & Glans Penis is generally at the Root of the latter, & the Beginning of the Praeputium, here the Cuticle is extremely thin, & the Cutis is easily affected.

1312. It here produces Itching Soreness & Tenderness, with a Discharge of thin Matter.

1313. When this Part takes on the Disease the Symptoms begin very early; forty eight Hours have been the whole of the Time elapsed between the Infection & the Appearance of them.

1314. When the Urethra is the Seat of the Clap, the Inflammation has generally its Place within an Inch or Inch & half of the external Opening.

1315. It mostly begins with a Sense of Itching at the End of the Orifice & sometimes over the whole Glans, the Lips of the Orifice will be unusually full, & turned somewhat outwards, the Penis in general seems something enlarged: Pain, Heat & Uneasiness in passing the Urine, sometimes preceding & sometimes following the appearance of a Running from the Urethra, the Canal of the Urethra feels inflamed, the Patient voids his Urine with Fear, from the Sense of the smarting & then the Urine comes off in small divided Streams.

1316. The Glands of the Urethra become inflamed

and irritation, [illegible] [illegible] [illegible] [illegible] in the [illegible]
on the under side of the urethra

1317. According to the Sensations & the degree of In-
flammation the discharge becomes of different
colours & different consistence, the appearance & [illegible]
[illegible] [illegible] [illegible], [illegible] the same.

1318 The Matter [illegible] upon a cloth will
be found to give [illegible] of various colours in the
centre of the [illegible] the colour will be [illegible] and
paler in the circumference.

Perhaps the changes of colour in the discharge
will depend upon a small quantity of Blood
being extravasated & mixed with it.

1319. The Matter will have a small tendency to
[illegible] which will be [illegible] & [illegible] to [illegible]
[illegible].

1320 The Symptoms & Progress of the Complaint
will differ very much according to the irritab-
ility of the Parts & the Degree of In-
flammation.

1321. The more violent the Inflammation the
more commonly it will induce great Extrava-
sation of the coagulable Lymph, occasioning
Chordee, & the whole length of the Ure-
thra, even to the Anus, [illegible] a [illegible] on
[illegible] of Chordee, Inflammation & Hardness
of the Glans Penis, [illegible] from the Ure-
thra & various [illegible]

1322. The Running comes from the Urethra and
its glands & in general [illegible], it does not
come from the bulbous Portion of the Urethra

otherwise it would be thrown by Jerks & not run off in the Manner it is known to do.

1323. In the Examination of Patients after Death who at the Time of their Dissolution laboured under this Complaint, the Ducts leading from the Glands have been found filled with the Matter.

1324. The Inflammation penetrating very deep, Cowper's Glands may inflame, suppurate & produce an Abscess, which is frequently the Cause of Fistula in Perineo.

1325. The Cause of the Gonorrhoea of the Inner, must be a Translation of the Matter from the external Part to the inner Surface of that Membrane, though it is difficult to account for the Manner in which it is done.

1326. It certainly can never be introduced durante Coitu, but the external Part must always receive the venereal Infection.

Q. We know it may be communicated this Way.

An Officer who had no Intercourse with the female Sex for a considerable Length of Time when in Germany, went to a Necessary, the Tube of which according to the Custom of the Country went sloping downwards, when he arose from his Seat he found something sticking to his Penis, upon taking it off he found it was a Pledget from a Sore, which some other Person using the Necessary had left behind him, in a few Days after a Gonorrhoea appeared.

1327. Chordè is of two Kinds.

1st The inflammatory

2d The simply spasmodic.

1328. The first is owing to an Extravasation of coagulable Lymph in the reticular Substance of the Corpus spongiosum, generally in the lower Part of the Penis, this is much more obstinate & remains much longer than the spasmodic, which is without Extravasation, it comes and goes at uncertain Periods of Time.

1329 The Hæmorrhage arises from some Rupture of Vessels in the Urethra, either by a Spasm or giving Way to the increased Violence of the Circulation. The Hæmorrhage is sometimes considerable & for the present not unfrequently relieves the Violence of the Inflammation & its Consequences.

1330 The Parts which sympathize with the Urethra will be

a The Testicle.

b The Bladder.

c The Muscles of the Urethra & Penis.

d The Glands of the Groin.

e The whole Pelvis.

f The Loins.

g The Stomach

h The whole Constitution.

1331. Sometimes there will be an erysipelatous Eruption of the neighbouring Parts.

1332. At different Periods of the Gonorrhœa the

Testicle will sometimes become swollen, this is seen to be reckoned a venereal but merely a sympathetic Affection of the Parts sympathizing with the Urethra.

1333. A Swelling of the Testicle may arise from any Cause irritating the Urethra, even the making a Bougie, or Cantharides.

1334. It sometimes comes on during the more inflammatory Stage of the Gonorrhoea, but much oftener when the Inflammation has abated. It is sometimes attended with an Increase, sometimes a stopping of the Running.

1335. The Complaint begins with a dull Pain & Heaviness of the Testicle, a slight Enlargement of it & a Sense of Uneasiness & Fullness in the Groin & Region, the Inflammation then increases & it becomes hard especially the Epididymis.

1336. Sympathy produces Pain in the original Seat of the Testicle, the Loins, Nausea & Sickness, even vomiting, Loss of Appetite, Uneasiness of the Bowels &c.

1337. The Swelling of the Testicle is not peculiar to the Gonorrhoea, it is often produced by Contusion, Parotitis, although more common in the latter.

1338. When the Bladder sympathizes, Strangury & ~~the~~ the common Symptoms of Stone in the Bladder will occur.

1339. The inguinal Glands will from Sympathy rarely terminate in Suppuration, &, unlike the swelled Testicle, are often curable without

Mercury, which shews, then, they are not venereal.

Q. When the inguinal Glands swell it is to be doubted whether they are always inflammatory & not sometimes purely spasmodic.

The Swelling of the Testicle will sometimes arise suddenly in a few Minutes, & go off as readily, requiring often less Time to subside in by a great deal than the common Swelling of the Testicle after the radical Cure for the Hydrocele. The Swelling will sometimes change Sides, being similar to the gouty Sympathy of the Testis.

1340. The Muscles of the Penis will often sympathize, & often undergo Spasms, producing sudden & involuntary Erections of the Organ.

1341. Of the Loins, Pelvis & Kidneys sympathizing with the Urethra it is unnecessary to speak, further than noticing the Fact, that Pain of those Parts attends Gonorrhoea.

1342. When the whole Constitution sympathizes, there will be slight Rigors, Heat & other mild Symptoms of general Irritation.

1343. The Distance between the Time of Infection & the Appearance of the Symptoms, so far as can be ascertained is all the intermediate Time, between ten Hours & six Weeks, most commonly however within twelve Days.

Q. In one Person - - - - 10 Hours.
- another - - - - - 12 Hours
- many - - - - - - 36 Hours
- D° - - - - - - - 2 Days.

In many - - - six Days
In a great number - - twelve Days.
In many - - four Weeks.
In some - - six Weeks.

1344. The Gonorrhoea is not peculiar to the venereal Disease, a Discharge from the Urethra, with Heat &c has been known to accompany gouty & rheumatic Affections of the Body.

1345. It has moreover been known to sympathize with cutting the Teeth.

4. In a Boy the Gonorrhoea returned twice while he was cutting his Teeth.

1346 The Urethra of a Patient who has once had the Disease is ever after extremely liable to it.

1347. We should endeavor to distinguish a Gleet from a venereal Gonorrhoea, in the Gleet the Glans Penis does not change Color, nor does it sweat a kind of Pus, as it does in the venereal Gonorrhoea.

1348. It often goes off spontaneously, & then it makes a somewhat puzzling Case, it has no specific Remedy.

1349. A constitutional Disease in the second Genus, is as we have above observed, sometimes though not very often known to arise from the first Species of the first Genus; whenever there is a kind of hard Chord arises leading from the Penis to the Glands in the Groin, Absorption of the Virus is always to be suspected, & the constitutional Gewas feared.

1350. This Circumstance most usually occurs in the Gonorrhœa of the Glans & Prepuce. The second Genus has also followed an internal Gonorrhœa, in which there was a Rupture of a Vessel & a Hæmorrhage from the Urethra, consequently an internal Wound, but it is very rarely the Virus is communicated to the System by Means of a Wound.

1351. The Seat of the first Species of the first Genus in Women is the Vagina, Nymphæ, Clitoris, and Urethra.

1352. It is not so complicated in Women as in Men, its Symptoms are much milder, & it is still with more Difficulty ascertained.

1353. Appearances will in general give but little Information, nor will its Symptoms enable us to decide.

1354. We can only judge the Woman has the disease, if she have the common Symptoms following her Connection with an infected Man, or if she while labouring under these Symptoms give the Disease to some sound Person.

§. The Vagina is not a Part sensible to common Irritation; hence Matter may remain, unperceived.

1355. We cannot however always determine that a Woman has a Gonorrhœa because she communicates Infection to a Man, as her genital Parts may have a Power of receiving and communicating the Infection, without having ever felt any Complaint herself, or may retain the Power of poisoning after the Gonorrhoea has been cured.

1356. From this it must be evident that a Woman does not always know whether she has or has not the Disease.

Q. A Woman had a Bubo formed in her Groin without knowing in the least of any preceding Affection.

1357. The common Symptoms of Gonorrhoea in Women are pretty similar to those in Men, as smarting in making Water, a Running from the Vagina, a disagreeable Sensation of the external Parts as the Clitoris & Nymphæ, a Swelling of the Labia, Pain in walking & the Complaints rarely having Exacerbations, except at the Time of making Water.

1358. Sometimes the Discharge will run down from the Vagina to the Anus, & produce Exulcerations of the Perineum.

1359. When the Disease goes on as in (1358) it is very doubtful whether it will then spend its Violence, as in the Gonorrhoea in Men.

1360. In both Sexes previous to the Appearance of the Discharge, the Constitution will sometimes become affected as in (1342) & a strange and unusual Sensation of the Parts will be perceived.

1361. Gonorrhoea without Infection may arise in both Sexes from various Causes (1344.)

1362. Although a Gonorrhoea will always cure itself & we have no Specific for the Disease, yet we can shorten its Duration & lessen its Symptoms by proper Remedies.

1363. Those Remedies are divided into internal & topical.

1364. The internal ones are either,

a. Evacuants, or

b Astringents.

The topical ones are either,

a Injections, or

b Bougies.

1365. Mercury is the Specific for the venereal Disease, but it seems of no other Use in the Gonorrhoea, than with a View to the Absorption of the venereal Matter in the Part thereby preventing its affecting the Constitution, but this we have observed rarely happens, & we have no Reason to believe Mercury has any specific Power on the Affection of the Membrane of the Urethra.

1366. Keeping the Bowells regular is necessary in Health, & therefore useful in this Complaint though purging is not generally serviceable, yet we have seen a brisk Purge entirely cure the Affection in which Case it must operate either by Derivation or by Sympathy.

1367. Diuretics are so far useful as by their Effect on the urinary Secretion they may lessen the Violence of the Irritation; Water is the best, but will require to be accompanied with some mucilaginous Substance.

1368. Balsams & Turpentines may by their specific Operation on the Part affected procure also a Change in its diseased Action & consequently effect a cure.

1369. Astringents do not lessen the venereal Irritation, but they may prove of some Service by lessening the Quantity of Discharge.

1370. Topical Applications (1364) must be either fluid or solid, the fluids are Injections, the solids, Bougies.

1371. The Effects of the solid must be more permanent as it can be kept longer in Contact with the Parts affected, however it produces so much Irritation that in general its Use is better omitted.

1372. Injections may be divided into

a. Irritating.
b Astringent.
c Sedative
d Emollient Injections.

1373. Injections curing the Gonorrhoea suddenly have been supposed to lock up the Poison, & throw it into the Constitution. But this Opinion is erroneous; for

1374. The Effect of the Injection here is to stop the farther Secretion of Matter, if then this be accomplished, it is evident that Injections must contribute rather to the Prevention of the second Gonorr. than bringing it on, the communicable of the Poison being Matter.

1375. Injections may either take off the Inflammation, & the consequent increased Secretion, or they may stop the Secretion without removing the venereal Inflammation.

1376. The irritating Injections are mostly astringent when made weaker, & astringent Injections if made stronger will act as irritating.

1377. Injections are irritating when they produce an Irritation greater than that of the Disease itself.

1378. Irritating Injections are in general improper, where the Constitution is extremely irritable, & the Inflammation has spread beyond the venereal Point, when used in this Case, they have become the Cause of Fistula in Perineo.

1379. When the Disease is milder, they generally succeed in removing the Symptoms sooner, for they produce the Cure by giving an Irritation greater than that given by the Disease, which being overcome by a greater Stimulus leaves the Part; they must therefore be improper, where the Parts cannot without Danger of increased Mischief bear a more powerful Irritation than that already present.

4. A proper Injection for this Purpose is a weak Solution of Sublimate in Water, if it give Pain it may still be further Diluted.

1380. Astringents may cure a slight Disease, they act by lessening the Discharge, & as they produce an Affection of the living Solids they may contribute to cure.

1381. They make the Vessels contract & lessen the Discharge however, they often produce a lessening of the Discharge only, without forwarding the Cure, nay, they sometimes protract the Cure.

4. When a secretory Surface has been inflamed, & the Part has received a Disposition to secrete, the compleat Action being taken on is a Step towards the Cure, we therefore see why astringents by checking the Secretion may sometimes retard a Cure.

1382. Sedatives soothe Pain & abate Inflammation; Opium is undoubtedly the best & most general sedative, but does not agree universally.

1383. Emollients in violent Inflammations are very useful, washing away the stimulating Matter & leaving the Surface of the Part soft & smooth.

1384. Sometimes the End of the Canal & of the Urethra at the Glans is contracted by Inflammation, which is a troublesome Circumstance, & indicates the Omission for the present of Bougies or Injections.

1385. Other topical Means, as mercurial Ointment, medicated Poultices, Fomentations &c can do little good except when the external Parts are the Seat of the Disease, or unless the Glands of the Urethra are so swollen as to be perceptible externally, in which Case we may use them cum fruct.

1386. In Hæmorrhage from the Urethra, we have seen Benefit afforded by the internal Use of

Turpentine & Balsams, Injections are not useful but hurtful here.

1387. Opium given internally has powerful effects in preventing painful erections & soreness of the Penis.

1388. The Chordee is in the Beginning relieved by bleeding from the System & still more so by Leeches applied to the Part & we are the more encouraged to practise the latter, as we have observed that a spontaneous Haemorrhage from the Rupture of some Vessel in the Urethra has removed Chordee; medicated Poultices & Camphor internally sometimes afford Relief.

1389. Chordee often continues after Inflammation of the Parts has subsided from the coagulable Lymph remaining extravasated, whatever then will tend to produce Absorption of the Lymph, viz. Rubbing it wt. Mercurial Ointment, Electricity, Friction & Cicuta are all found serviceable, the Affection will, however, continue long after the Complaints have ceased & then go off slowly.

1390. In the spasmodic Chordee we have known Bark singularly useful.

1391. If the Glands of the Urethra suppurate, they become of the Nature & produce the Effect of Chancres & as such they may be treated.

1392. When the Bladder takes on the Affection (1338) the Complaint is rarely Inflammatory, but mostly sympathetic. Bleeding is rarely useful, & is, if employed at all, to be managed with Caution & in general; topically, the warm Bath, Plasters of Opium to the Perinaeum, and to the Origin of the Nerves of the Bladder, & Glysters with Opium will commonly succeed.

1393. This Symptom, in general, is not hazardous, but it is to be suspected that it lays sometimes the Foundation of future Mischief.

1394. Blistering the Perinaeum has sometimes succeeded.

1395. When the Testis is swelled (1333) Rest in an horizontal Position with the common Treatment of inflammatory Affections is to be insisted on.

1396. Vomits have sometimes great Power in carrying off this Affection.

Q. Perhaps the Practice of employing Vomits arose from Relief having been given by a Vomit, administered to cure a Sickness in the Stomach occasioned by Inflammation of the Testis.

1397. It is not determined how far Mercury is useful in Cases of swelled Testicle; we have Reason to believe it may sometimes be efficacious after the Inflammation is over.

1398. Sometimes the Testicle takes on the suppurative Inflammation & an Abscess is formed, which however, requires no particular Treatment, as it is not venereal Matter that is formed; Mercury is unnecessary.

1399. When Resolution takes Place, the Swelling of the Testicle subsides, but slowly, when it diminishes, it grows gradually softer, especially in the fore part, & which sometimes become even softer than natural.

1400. The Epididymis, however, ~~gradually~~ more continues hard, & it is to be suspected that in Consequence of that Circumstance, the Testes is sometimes rendered useless, yet in general no Inconvenience is observed to arise from it.)

1401. The Cure of the Gonorrhoea in Women is still more simple than in Men; Washes & Injections are proper here also when the Vagina is the Seat of the Complaint, the internal Surface of it should be several Times greased so high as can be reached by the Finger, with mercurial Ointment.

1402 As the Vagina is less irritable & sensible than the male Urethra, the Injections to be used for the former may be prepared stronger.

1403. If the female Urethra be affected, Injections will not be admissible, but mercurial Ointment may be insinuated into that Canal; as observed above, it is not easy to know when the Cure is compleated.

1404. Should the Inflammation spread & affect Cowper's Glands, the mercurial Ointment may here also be used, if they suppurate, they are to be considered & treated as suppuratory Buboes.

1405. It is sometimes necessary to attend to the Constitution in the Cure of Gonorrhoea.

1st If the Constitution be strong & disposed to Fever, it may be right to bleed.

2d If the Complaint should take Place in a low weak, irritable Habit, & when the Inflammation has a Disposition to diffuse itself (which sometimes it will even to the Bladder) then Evacuations will be hurtful, & the liberal Use of Bark will be adviseable to destroy the diseased Irritability.

1405. It is generally found that the Constitution disposed to Fever & Inflammation (1405) admits most easily of the Gonorrhœa being cured.

1407. In some irritable Constitutions it has been observed that a Fever arising the Symptoms have gone off, & that when the Fever has left the Patient the local Symptoms have returned again; in others the coming on of a Fever even when the Disease was mild has increased the Gonorrhœa, & the Fever again going off, the Gonorrhœa has been cured.

1408. It is perhaps always right to have in View the Possibility of the Absorption of venereal Matter into the Habit, especially when the Disease has been of long standing. therefore.

1409. Although Mercury has no specific Action in the Inflammation of the Urethra yet with a View to prevent the ill Effects that may arise from venereal Matter being absorbed into the System, it is right to administer it especially towards the latter end of the Cure, & when the Process of Absorption must be nearly at an End.

Q. It is difficult to say whether Friction, Mercurial will always prove a Preventative to the second Disease, but it is the more sure Means we know of at present, & therefore to be advised, the Mercurius calcinatus or Ointment are recommended.

13. We judge of the Gonorrhoea advancing to a Cure, when the Cheesy Color of the Gleet changes to a pale Tinge, & other Symptoms also abate, as the Running decreasing in Quantity & becoming more stringy, Pain & Tenderness of the Penis going off &c.

14. It often happens that the Symptoms will leave the Patient i.e. he will continue well even for a Month, & then they shall return, but it is probable that they will not be found to be venereal, when they appear a second Time.

Q. We have remarked that there is perhaps no Possibility of distinguishing between a Gleet & a Gonorrhoea, we shall observe the following Cases.

Case 1.

A Gentleman in April 1780 got a Gonorrhoea, swelled Testicle &c. In June all his Symptoms left him, except now & then a little Discharge of stringy Mucus. Sept. 1. He married & gave his Wife a Clap. It is to be observed that he met with some Difficulty in entering the

Vagina, & that perhaps from the Force he exerted his inflammatory Symptoms returned.

Case 2d.

A Gentleman had a Gonorrhoea, two Weeks after he lost every Symptom except a Gleet he lay with & clapped his Wife. We know that in some the Inflammation & Running have been kept up even for twelve Months, & yet the Patients have not clapped the Woman, with whom during that Time they have been connected.

1412. Strong Sensations in the Urethra & Glans, especially when the Bladder has been affected, will often be perceived by the Patient after the Gonorrhoea is gone off. These will sometimes be obstinate & troublesome, & too commonly render the dissatisfied & credulous Patient a Dupe to Quacks.

1413. An obstinate Gleet will sometimes be cured by Means similar to those which give Rise to it, namely, a new Inflammation.

1414. Among the Complaints which will remain after a Gonorrhoea is cured are those (1411. 1412). Swelling of the Testicles, & Hardness of the Epididymis, wasting of the Testicle, Affections of the Bladder, Strictures in the Urethra, Carbuncles, Fistula in Perineo, Swelling of the Prostate Gland, Paralysis of the Urethra & Paralysis of the Bladder.

1415. Gleet has Nothing specific in its Nature, nor ty produces in others a similar Disease; it differs from Gonorrhoea, in

a That the Discharge is never infectious,

b The Discharge has its Globules, and the Globules swim in Mucus and in Serum.

1416. It is incidental to all Constitutions, the strong as well as the weak; it arises from various Causes besides Gonorrhoea.

1417. It sometimes goes off naturally, but whether from some Change taking Place in the State of the Parts which are the Seat of the Disease, or from the Want of Power to continue the Discharge we do not determine.

1418. It generally takes its Rise from Habits of Action in the Parts & almost always accompanies Strictures in the Urethra.

1419. We attempt to cure it by Art in three Ways, namely,

a Constitutionally.

b Locally.

c Sympathetically.

1420. The Constitutional Cure may be divided into.

a Specific.

b Strengthening

1421. Specific Medicines are Bals. Capiv. &c, if they do Service it will generally be perceived immediately, but should no Benefit be found for five or six Days, they should be left off; should they relieve they should be persisted in for a Length of Time, for if discontinued the Complaint will not uncommonly return.

1422. The strengthening Medicines act upon the Disposition of the Parts in Question, or in common with that of the Habit in general.

1423. Medicinal applications may affect locally,

1st As Specifics, & these have more Influence when applied locally than when by Means of the System. (1421)

2d As Astringents, as Decoction of Bark, Solution of white Vitriol, Alum &c, these produce their Effects by causing a peculiar tonic Action in the Parts, their Use should be long persevered in to produce a Cure.

3d Local Medicines may produce a Cure by the Violence they offer to the Parts, but their Use should be deferred untill other Methods have been tried; they are followed by an Increase of the Discharge from the Urethra; of this Kind are very stimulating Injections, as Solution of Sublimate & Bougies either simple or medicated; as to the Time these should be employed, if the Injections be very irritating, two or three Times will be enough, if less irritating, a Week or two; Bougies may be used five or six Weeks, for Bougies made irritating a much shorter Time will suffice.

1424. The third general Method is by Means of Sympathy or perhaps Derivation, as a Gleet being cured by two Chancres being formed on the Glans Penis, or by applying a Blister to the under Side of the Urethra, or by Electricity &c.

1425. Uneasy Sensations of the Bladder & Urethra have been removed by Blisters applied to the Perineum or Loins; the Use of Hemlock Injections of Sublimate & other Means, but Blisters to the Perineum have seemed eminently useful.

7. Case 1.

Sir Charles Bunbury's Servant had for a Complaint of this Kind, consulted Dr Warren, Messrs Pott & Gunning without Relief Mr Hunter applied a Blister to the Perineum, which soon cured him, it was kept open six Days.

Case 2

A Portuguese Gentleman had for two Years after having had a Gonorrhœa such uneasy Sensations in his Urethra & Bladder as to give Suspicion of a Stone. Mr Hunter examined him per anum as well as by sounding, but found Nothing unnatural; a Blister was applied to the Perineum, which cured him almost immediately; Two Weeks after he got a fresh Clap, but no extraordinary Circumstances attended it, nor did his old Complaint return.

1426. In the Gleet, Rest in general, should be recommended, though sometimes the Complaint has been removed by riding on Horseback, Regularity & Temperance are also generally necessary, though there are not wanting Instances of their opposites effecting a Cure

1427. In Women the Vagina is the Seat of the

Gleet, the Treatment recommended in Men, will here also apply, the Use of Bougies excepted.

1428. Chordee remaining after the other Symptoms have ceased, rub the Parts externally with Ung: mercur: joined with Camphor; Electricity may also be had Recourse to.

1429. Hardness of the Epididymis, after a swelling of the Testicle will sometimes remain through Life, without any ill Consequences; sometimes Relief has been afforded by rubbing the Scrotum with mercurial Ointment, sitting on the Steam of Water &c

1430. The Testicles are subject to spontaneous Disease, more than most other Parts of the Body; like the Teeth they are added only for particular Purpose, & they will be (similar to the Thymus Gland or Membrana pupillaris) sometimes wasted & at length entirely absorbed. This may happen at any Age.

Case 1.

A Surgeon had a Gonorrhoea & Bubo, the Testicle on one Side, entirely disappeared.

Case 2.

A young Gentleman aged eighteen, without any Clap, had a spontaneous Inflammation of the Testis, on one Side it was wasted gradually to the Size of a Horse Bean the spermatic Chord unaltered; he had afterwards a similar Attack upon the other Testis, which continued wasting untill not a Vestige of it, except a few loose Fibres, could be found.

1431. This disruption of the Testicle will follow an Inflammation of the Testes, Hydrocele & Hernia scrotalis, & sometimes will take Place without any preceding Disease at all.

1432. Obstructions to the free Passage of the Urine through the Urethra may arise from different Causes, namely,

1st Excrescences in the Canal.

2d Tumor without the Urethra pressing on its Sides & hindering its free Dilatation.

3d. Strictures of the Urethra.

1433. If when the Urine passes off only in a small Stream & with Difficulty we pass a moderate sized Bougie, & find we can not introduce it with Ease we have ~~no~~ Reason to suspect a Tumor (1432-2)

1434 Caruncles or fleshy Excrescences (1432-1) growing in the Urethra are seldom, though they are sometimes known to exist, probably they are a Kind of internal ~~[illegible]~~ Wart. Ulcers in the Urethra we have never met with.

1435. Strictures in the Urethra (1432-3) are of three Kinds

1. Permanent.
2. Spasmodic
3. Mixed.

1436. All Canals whatever are subject to Strictures, consequently the Urethra is not exempt, & indeed this

Canal is subject to them not particularly as the consequences of Gonorrhoea, because they frequently take Place in the Urethra without any venereal Symptom whatever preceding.

1437. The Seat of the Gonorrhoea is commonly very near the Orifice of the Urethra, the Seat of the Stricture is commonly in the membranous Portion.

1438. They do not seem to arise from the Use of Injections, nor do Bougies ever produce them.

1439. Ulcers in the Urethra have been supposed to be Causes of them, but we have never met with such a Case.

1440. We do not understand properly the Causes of Strictures in the Urethra, any more than we understand why they should occur in other Canals.

1441. When a Gleet remains obstinate, & the Urine flows in a smaller Stream than common, or in divided Streams, or is excerned with Difficulty, there is Reason to suspect a Stricture & we should examine by passing a Bougie.

1442. Permanent Strictures may take Place in the whole Circumference of the Urethra, making an annular Stricture & lessening the Area of the Canal, as though a Piece bis as though a Piece of Chord was drawn tightly round the Urethra; or they must occupy one Side of the Urethra, in which Case the Contraction will not be circular but only on one side & then the Area will not be so much diminished, as in the other Case, but the general Dilatation of the Urethra being resisted, the Figure of the Canal will necessarily be altered. The Extent of the Strictures will also differ in Length, more or less of the Urethra being occupied by them.

1443. The Number of Strictures will also be different in different Urethrae, sometimes only one, sometimes four, five or six.

1444. The Portion of the Urethra in which the permanent Strictures take Place, will be whiter & harder than the rest of the Canal.

1445. Permanent Strictures will continue to a great Length of Time, even Years, their Formation & Progress are slow, they are generally, for obvious Reasons, overlooked, untill they have become considerable.

1446. They are generally more troublesome in cold Weather, than in warm, & therefore are worse in Winter than in Summer.

Q. This proves that the Urethra has something of a muscular Power.

1447. Permanent Stricture continuing for Years teazes the Patient & at Length gives Rise to the worst Diseases, irregular Enlargements in the Urethra, Diseases of the Bladder, Fistula in Perineo &c.

1448. To understand properly why these Circumstances should arise from Strictures of the Urethra, as also the Nature of spasmodic Strictures, we should have a clear Idea of the Structure and Functions of the Bladder & the Urethra.

1449 The Bladder is a muscular Bag & has a Power of Contraction for expelling the Urine, it can contract itself to the smallest Size.

1450 The Urethra is also a muscular Bag & can contract itself so as to shut its Canal entirely.

1451. In a natural & healthy State of both Urethra & Bladder, the following Circumstances must be present.

1st The Actions of the Bladder & Urethra must be alternate, that is, while the Bladder is contracting itself to expell the Urine, it is necessary that the Urethra should dilate itself or become relaxed in order to admit of the free & regular exit of the Urine.

2d When the Bladder has ceased from acting then it is requisite that the Urethra should contract itself to prevent the dribbling away of the Urine while the Bladder is in a State of Relaxation.

3d The Area of the Urethra when dilated must bear a certain Proportion to the Force with which the Bladder acts in the Expulsion of the Urine.

4th The Disposition of the Bladder to contract & the Disposition of the Urethra as increasing to be dilated, must take Place in the same Point of Time & the Strength of the Disposition in each must be always in a certain & exact Proportion one to the other.

1452. From considering what is advanced, (1449-50-51) we readily perceive

That as a Resistance given to the Actions of any muscular Body greater than it can overcome, & that frequently repeated, either increases its Susceptibility of a Disposition to act, or otherwise produces a Destruction of its muscular Power, & so renders it paralytic; if by the Urethra not receiving or being unsusceptible of a Disposition to relax them, the Bladder is continually, or not relaxing & dilating in the Proportion of Time & to a proper Size of Canal, either an increased Irritability & Susceptibility of Action in the Bladder must take Place, or its muscular Power being destroyed, a Paralysis must occur.

1453. The Urethra not dilating in due Time or to a proper Size (1451-4) & Resistance being thereby made to the Action of the Bladder, the latter increases ~~to~~ the Violence of its Action to overcome the Resistance & this Resistance being repeated every Time the Bladder has a Disposition to act, the Viscus becomes thickened, or the Bladder like all other muscular Parts increases in Density from frequent Action, & for a Time at least in Strength, it also becomes more irritable.

¶. The muscular Coat of the Bladder has by these Irritations been made a Quarter of an Inch thick; the Stone in the Bladder also produces a similar State of it, by acting & dilating irregularly it often becomes fasciculated, hence Sacs are formed in which Calculi are sometimes lodged.

1454. If the Resistance made in the Bladder be so great, that it cannot overcome it, but continues a Length of Time, untill the urethra is either spontaneously or artificially dilated, & this unconquerable Resistance often repeated, the muscular Power of the Bladder is destroyed and a Paralysis of that organ succeeds.

1455. In Consequence of Inflammation, partial Contraction in the Urethra &c, the upper Part of the Urethra loses its Power of Contraction, a Paralysis of its muscular Power takes Place, the Urethra is paralysed & no Contraction of the Urethra attends the Dilatation of the Bladder, & Urine is continually dribbling off.

1456. If the Area of any Portion of the Canal of the Urethra be diminished by permanent Stricture of the Urethra, or any Tumor compressing its Sides so that although the Urethra has a Disposition in due Time to become dilated, yet the Urine not being evacuated with Speed proportionable to the Force with which the Bladder acts, will induce an irritable Bladder & a thickening of its Coats.

1457. The Urethra may receive a Disposition to contract irregularly without Alteration of its Structure, & that only in particular Parts, this constitutes the spasmodic Stricture. (1435–2).

1458. The Urethra may be permanently dilated in particular Parts, & contracted in others, by this Means its Surface will be unequal and often rough.

1459. The State of the Bladder may be rendered such by the Distension of it & Resistance of its Contraction, that it cannot admit the Influx of fresh Urine by the Ureters: hence these Tubes shall be distended with Urine, & the Distension & Enlargement of them, shall be continued even to the Pelvis of the Kidney, which shall itself also become distended.

¶. Sometimes Matter has been discharged from the Kidneys, perhaps from the Irritation, & this without our finding any Ulcer on Dissection.

1460. It frequently happens that there shall be not only a permanent Stricture lessening the Size of the Canal of the Urethra, but also in the same Urethra a Disposition to spasmodic Contraction; this constitutes the mixed Stricture /1451-3/.

1461. The Urethra has sometimes a Disposition to contract & close its Canal independent of any Alteration in its Structure, & loses not the Disposition when the Bladder gets into Action; this being in Fact a Spasm of the Urethra we call it spasmodic Stricture.

1462. Another Cause of Obstruction to the free Passage of Urine, may be a Swelling of the Prostate Gland.

1463. The Use of the Prostate Gland is not understood; from its making a Part of the urinary Canal, it is evident that a Swelling of it, must produce an Alteration in the State of the Urethra.

1464. When it is enlarged, it stretches the Urethra anteriorly & posteriorly, & flattens & narrows it laterally, the small Portion at the Back of it will act as a Valve to the Canal, hindering the free Egress of the Urine.

1465. When greatly enlarged, little or no Urine will be voided, & all the Symptoms of an irritable Bladder will come on.

1466. When there is no Symptom of Disease in the urinary Canal & we can find neither Stricture nor Stone, we should be led to examine the State of the Prostate Gland.

1467. Pass the Finger in Ano as far as the first Joint, if a Hardness be felt extending higher than the Finger can reach, we may believe it to be a Disease of the Gland.

1468. We may find this Disease in two Stages, viz

1st When the Obstruction is not so great but a Bougie or Catheter may still be passed into the Bladder.

2d When neither of them can be introduced.

1469. We have noticed, 1464, that a small posteri Portion of the Prostate projecting into the Urethra sometimes acts as a Valve; through this projecting Substance a Catheter has been sometimes forced into the Bladder, which has ultimately terminated in Death.

Q. A Gentleman as laboured under a Complaint of this Kind, by forcing the Catheter into the Bladder an Hemorrhage ensued, the Blood coagulating stopped up the Holes of the Catheter; when afterwards introduced into the Bladder, the Water could not be drawn off & the Patient died.

1470. Permanent Strictures in the Urethra give Rise also to Fistulae in Perineo; Nature endeavours to get Rid of the Stricture by producing an Ulcer in the Part it occupies.

1471. But this is not always the Case, the Seat of the Ulceration will not unfrequently be between the Stricture & the Bladder, whichever is the Case the Ulceration directs its Course from within outwards, to give an Exit to the Urine, as Ulceration in an Abscess observes a similar Course to give an Exit to Pus, with this Difference however, that in the present Instance the Process is slow with little or no Inflammation, hence the Urine will insinuate itself into the cellular Substance & Corpus spongiosum of the Urethra, so that the Openings formed in the Skin shall not correspond with the Openings in the Urethra.

1472. This latter Remark will however, only hold good, when the Seat of the Stricture is before the membranous Part of the Urethra, when more posteriorly, the Ulceration is more regular & more similar to a common Abscess.

1473. By the Insinuation of the Urine into the cellular Substance, Inflammation of considerable Extent followed by Suppuration or even Gangrene may be induced.

1474. The Prostate Gland, Cowper's Glands, the bulbous Parts of the Urethra, as well as the cellular Substance may partake of the Suppuration and the

Matter point externally.

1475. When an Abscess forms in Perineo from this Cause there is generally a free Passage for the Urine into the Abscess & both its ~~Urethra~~ Opening from the Urethra & its external Opening will not unusually admit a Catheter into the Cavity.

1476. As in other Fistulae so in those of the Perineum the Ulcer in the Skin has generally a stronger Disposition to heal than that of the deeper seated Parts; hence, the external Orifice will sometimes close, & then the Urine insinuating itself diffusively into the cellular Substance of the surrounding Parts, will at Length make its Way through a Number of Orifices formed by Ulceration in the Skin of the Perineum, Scrotum, and even inside of the Thighs, which are commonly the Mouths of an equal Number of Sinuses.

1477. Seminal Weakness is considered as a Consequence of Gonorrhoea virulenta.

1478. The Disease which commonly goes by this Name is a copious Discharge of a Drop like Mucus, at the End of making Urine, & Straining in going to Stool, in which Case there is often a copious Discharge of Mucus, which is considered as Semen.

1479. But in Reality this is not Semen, but the Liquor of the Prostate Gland & Vesiculae seminales.

Q. Mr. Hunter does not allow that the Vesiculae seminales contain Semen.

1480. As a Proof that this is no Discharge of Semen we observe that it is common to old Men, & that those who are afflicted with it find no Diminution of their venereal Desires, or of their Powers, that the Quantity evacuated is often more than the Quantity of Semen the Patient emits, that to produce it in some, violent Efforts are required, as straining at Stool, or in evacuating the last Drops of Urine, & lastly that Patients, immediately after this Discharge has come away, have been able to emit a fresh & natural Quantity of Semen, which had the first been really so, it would have been impossible for them to have done.

1481. It generally preys much upon the Mind & Imagination of the Patient, & hence rather than from its proper Effects on the Constitution renders him weak & debilitated.

1482. But real involuntary Discharges of Semen may attend some Patients & this a Matter of serious Consideration.

1483. The Organs of Generation like many other Organs consist of two Parts.

1st Those whose Action is primary, as the Testis.

2d Those whose Action is secondary, as the Penis.

The Actions of the second should always follow those of the first, Irregularity in this Circumstance is productive of Disease.

1484. When the Penis takes on Action without the

Disposition of Action in the Testes being increased, we have involuntary Erections of the Penis, which may be similar to Chordee, except that it is attended with no Pain, or at most with only a Sense of Uneasiness similar to that which we experience in the Part after Coition.

485. Involuntary Erections of the Penis may be spontaneous, or may arise from visible Irritation of the Urethra, as virulent Gonorrhoea.

Q. Perhaps Mr Hunter means in this Place Erections of the Penis taking Place without any libidinous Ideas being first excited in the Mind.

1486. These Erections are to be considered as spasmodic Affections of the muscular Powers of the Penis, & therefore similar in their Nature to Spasm of any other muscular Part.

1487. But the Penis may not only act, without any previous corresponding Disposition in the Testes, but the Testes may also act without any corresponding Action in the Penis.

1488. This is the Reverse of the other Disease, the Semen will here be discharged on every, even the slightest Occasion; the least Friction of the Glans Penis, as in walking will occasion it, without an Erection of the Penis, so will the most simple Thought on venereal Matters, a Dream in the least Degree lascivious &c, & here the Semen runs off like the Stools or Urine.

1489. Caruncles, (1420) we may attempt to cure by producing Ulceration of the Carnosity; whether this can be done by the Bougie is doubtful, When it fails the Caustic should be used in the Manner, hereafter described in the Treatment of Strictures.

1490. The permanent Stricture is to be cured either by

a Dilatation. or

b Ulceration.

1491. The Method (a) is by Means of Bougies, in the Use of which we must attend to certain Circumstances here laid down.

1492. We are to be extremely careful not to make a false or new Passage by Means of the Bougie, & we are also to ascertain, if possible, whether any false Passage has already been made for the Bougie.

1493. If upon Enquiry we learn from the Patient that Bougies have already been used, & that Ground was gained in the Length of the Bougie which was last introduced, without, however, getting clear of the Stricture, we have Reason to fear a false Passage is already made.

1494. Near the Orifice in the Glans Penis a Bougie may by Chance be thrust into the Mouth of a Lacuna; this should be attended to, because it scarcely ever happens that Strictures so low down obstruct the Passage of the Bougie

1495. We should at first attempt to introduce a moderate sized Bougie, if that will not pass, we have Recourse to a smaller & smaller until we come down to one of a minute size.

1496. The great Inconvenience of using a small Bougie is, that it bends in the Urethra, & so doubles; we should in our Introduction of the Instrument endeavour to ascertain this, least we think the Bougie is advancing when it is only doubling.

1497. When a Bougie is introduced, if it be doubling, it will generally recoil if the Hand be removed, if it be really advanced into the Urethra, the Length that it seems to be it will not recoil if by taking away the Hand we cease to push it forwards.

1498. When a Bougie hesitates in its Passage but does not recoil, we should stroke the Perineum with one Hand, at the same Time that with the other we gently push on the Instrument.

1499. Sometimes an advantage is gained by giving the Bougie the natural Bend of the Urethra, before it is introduced.

1500. If we can introduce the smallest Bougie the cure of the Patient is generally in our Hands, as by increasing the size of the Bougie in future Introductions, we can produce the necessary Dilatation.

1501. We suffer the Bougie to remain in the Urethra a longer or shorter Time, according as the Patient can endure its Presence from five or ten

Minutes to two or three Hours & this we at first repeat daily untill a large Bougie can be easily passed & no Obstruction to the Stream of Urine remains; we then pass it less frequently, but as there is always a Possibility of the Complaint returning those therefore who have been afflicted with Strictures should never pass any great Length of Time without introducing a Bougie.

1502. The most convenient Season for using the Bougie will be a little before Bed Time, or an Hour or two before the Patient gets up in a Morning.

1503. If the Weather be very cold, the Stricture may be more violent, so as to prevent any Urine passing off in the Introduction of the smallest Bougie; hence we are to make Use of such Remedies as are temporary Relaxants, as the warm Bath, Glysters with Opium, Blisters to the Perinaeum &c.

1504. A Bougie sometimes cannot be introduced beyond the Stricture the first Time; in that Case we are to introduce it gently as far into the Urethra as we can & leave it there for some Time; by several Repetitions of this Practice, we may expect in general to get beyond the Stricture.

1505. From an Increase in the Disposition of the Urethra to contract, it will sometimes happen that we may be able this Day to pass a Bougie, & quite unable the next.

1506 The Passage through the Stricture is not always straight, this we shall judge of from the Appear rance of the Bougie, after it is withdrawn.

1507. The Bougie does not act in the Cure of Strictures simply as a Wedge, that is in a Manner it would do in a dead Urethra, but it acts upon & produces a Reaction of the living Parts, and the Cure is accomplished either by the Parts habituating themselves to the Pressure or by interstitial Absorption being excited.

1508. We also attempt to cure Strictures in the Urethra by Ulceration, & this is effected either by the Irritation of a large Bougie continued untill ulcerative Absorption arises, or by Means of a Caustic

4. Formulae for Bougies.

℞. Diachylon.
Shel Lac

When Bougies are introduced Care should be taken to prevent their slipping into the Bladder, by tying Thread or narrow Tape round their upper End & bending it over the Glans Penis.

Some Persons have such a Disposition to form calcareous Earth Concretions, that a Bougie cannot remain in their Bladders a few Hours without being incrusted with calcareous Matter; Such Persons should use a great deal of Exercise

Mr. Bromfield took out a Bougie out of a young Man's Bladder, when it had remained two Weeks

& a large Quantity of calcareous Earth had crystallized upon it.

In passing a Bougie it may be stopped by a Lacuna, draw it back in that Case, turn it & you will avoid the Orifice.

1509. Although the Stricture is not an originally formed and therefore being a weak Part, may be without much Difficulty made to ulcerate, yet great Care must be taken that the Bougie is not forced into the Corpus spongiosum Urethrae, which has been done & the Instrument pushed even through the cellular Substance to the Rectum.

1510. It may not be useless to repeat the Remark, that if in passing a Bougie it seems to make considerable Progress & at the same to be confined by the Stricture, there is Reason to suspect that a new Passage is forced open

1511 Of this, as well as of suffering a Bougie to slip into the Bladder, the Surgeon should ever be extremely cautious.

1512. The Cure by Ulceration, is, generally speaking, to that Part of the Urethra which is strait, & then in Cases of Strictures not readily yielding to the Pressure of the Bougie, it may be properly had Recourse to.

1513. The Method of producing Ulceration by Means of the Caustic may be employed when the Bougie cannot be passed, & the Stricture is in the strait Part of the Urethra.

1514. The following Instruments are necessary.

1. A Silver Canula

2. A Stillet, one End of which is solid like a blunt Probe, the other made of Gold, like a Port Crayon, & in the Gold End a Piece of Caustic is to be fixed.

1515. In the Operation, the Canula inclosing the Stillet with the Probe End downwards is to be introduced up the Urethra, untill the Probe strikes against the Stricture, the Stillet is then to be withdrawn, and turning the End armed with the Caustic downwards is to be again introduced through the Canula, untill the Caustic comes in Contact with the Stricture, where it is to be held for a Minute or two & then withdrawn within the Canula, which is next to be removed, this Process is to be repeated every other Day, untill the Intent is accomplished.

§. Mr Hunter Observes that in some Cases of Stricture in the Urethra, he has succeeded by Means of Caustic beyond all Expectation.

In one Case where the Stricture was between the membranous Part of the Urethra & the Glans Penis, a few Touches of the Caustic enabled him to pass the Bougie

In two other Cases in which the Stricture had produced Fistula in Perineo & one of which suffered no Urine to pass by the Penis, the Caustic produced a Cure.

He further remarks that it is safer to use the Caustic than to persevere too long in irritating the Stricture with the Bougie, as Force in the latter Case is so easily productive of a new Passage.

1516. The Patient should make Water immediately after the Stilet is withdrawn, or else warm Water should be gently injected to wash off any Portions of Caustic that may be left in the Urethra.

1517. A slight Ischuria sometimes follows this Method of Cure, which readily yields to the common Remedies

1518. We have said (1515) that this is to be repeated every other Day; some Time is to be allowed for the separation of any Slough which may be formed.

1519. The ill Effects that may follow the Use of Bougies, besides making false Passages are

1st That the first or second Time that the Bougie is introduced, many Patients will be affected with Sickness & Syncope, but this goes off of its own Accord, & does not return on subsequent Repetition of the Use of the Bougie.

2d A Discharge of Pus from the Urethra, when before there was none, & an Increase of that Secretion when before existing, this is however an Effect of but little Consequence.

3d An Inflammation & Swelling of the Testicle, in which the common Treatment is to be had Recourse to.

4th A Sympathetic Swelling of the inguinal Glands.

5th. a Bougie slipping into the Bladder may form a Nucleus for a Stone, should it slip so far that it cannot be taken hold of in the Urethra, it must be extracted by the Operation of Lithotomy.

Q. If it slip within the Urethra so far that it cannot be taken hold of with the Finger or Forceps, endeavour by grasping the Penis tight in one Hand to prevent its getting farther towards the Bladder, & with the other Hand gently draw the Penis forwards, then backwards, so as if possible to work the End of the Bougie upwards, untill it comes within the Reach of the Finger or the Forceps; should this be ineffectual, the Bougie must be fixed steadily in the Urethra, cut down upon & extracted.

1520. The Bougie making a new Passage is not in general productive of new Disease, as the Mischief done is generally early discovered, but it will impede the Cure of the present.

1521. If the Bougie have made its Way through the spongy Body of the Urethra, it will pass onwards towards the Rectum, if it the membranous Portion, it will take any Direction.

1522. The Remedy for, or Cure of the new Passage is to be performed by Incision.

Q. Pass a Staff into the Urethra as far as it will go, which will in general be to the Bottom of the new Passage & beyond the Stricture, then feel for the End of the Instrument externally, & cut down into the Groove, making a Wound of an Inch or an Inch & a half long, & carrying the Incision a little Way into the Scrotum; then take a Probe & pass it through the Wound into the Urethra to the Stricture, if it meet with an Obstruction pass two Canulæ, one on each Side of the Obstruction, until they are brought as near to each other as possible; then thrust a Piercer from within one Canula through the Obstruction into the other Canula, & withdrawing it supply its Place with a Bougie; next remove the lower Canula & the Bougie will appear in the Wound, next take out the upper Canula & introduce the Bougie along the Canal of the Urethra into the Bladder; it may be right then to lay the new Passage open through the whole of its Extent, that all may heal together & least the new Passage should in future receive the End of the Bougie & prove a Hindrance to the Cure.

As it may be difficult to introduce a second Bougie after withdrawing the first, the first should be suffered to remain in the Bladder for some Time, or perhaps it may be better to use the first Time a flexible Catheter, afterwards the Bougies should be increased in Size, & their Use persisted in, until a Cure be obtained.

1123. In the performing of which it must be a Prinple that the Urethra is to be gradually dilated beyond the Extent of the Stricture.

1524. In the spasmodic Stricture, if the Symptoms be urgent, we must have Recourse at once to the Bougie or the Catheter the Bougie is the least hazardous, & a large one can often be easily passed, & will then readily relieve the Patient, even when we cannot pass it, by conveying it as far as we can without Force & then leaving it, the Stimulus its Presence gives to the Urethra will relax the Stricture & permit the Urine to pass.

1525. We may internally administer Opium & the Terebinthines, Camphor may relieve this Spasm as well as Strangury produced by Cantharides, Externally we may use

Fomentations.
Warm Bath.
Steams of warm Water
Blisters to the Perineum or Loins &c

1526. There will rarely be permanent Strictures producing urgent Symptoms, without spasmodic Affection of the Urethra also taking Place. In the mixed Stricture we shall find sufficient Directions for Practice by attending to what has been said on the two other Species, the permanent & the spasmodic.

1527. In endeavouring to relieve the Bladder rendered morbidly irritable, we should observe the following Directions.

1st We should endeavour to remove all Obstructions to the free Exit of the Urine

2d We should instruct the Patient never to suppress an Inclination to make Water

3d We should endeavour to relieve the present urgent Symptoms by giving Opium internally, Glysters &c and

4th We should try the Effects of a new Irritation, as a Blister to the Perineum or to the Loins.

1528. In Case of Paralysis of the Bladder, the Catheter should be often introduced to keep the Bladder from distending, & when we are evacuating the Urine, Pressure should be made by the Hand upon the Belly, we should also apply Blisters to the Perineum or the Loins, & give stimulating Medicines internally.

1529. In Paralysis of the Urethra, which is a more rare Complaint, a similar Treatment is to be adopted, especially the Application of a Blister to the Perineum.

1530. Hemlock has seemed to be serviceable in the complaint, attended with a Discharge of the Liquor of the Prostate & Vesiculæ seminales, falsely called seminal Weakness, Debility. Bark & other astringents & strengtheners are also proper.

1531. Involuntary Erections of the Penis being a nervous & spasmodic Complaint, antispasmodic Remedies may with Propriety be called in, such as warm & cold bathing, Opium &c.

1532. In Cases of real seminal Weakness, Opium has afforded singular Relief & may be used both internally & externally, that is applied to the Scrotum.

1533. The enlarged Prostate is most incident to old Men, although young Men have sometimes been affected with it.

1534. No Cure is known for this Complaint, Hemlock & Sea bathing may be beneficial, as the Disease may not improbably be owing to Scrofula; Opiate Glysters should be frequently thrown up to relieve the Pain & lessen the Irritation.

Q. Catheters employed for drawing off the Urine should be considerably curved at the End, & should be introduced carefully, yet with some Expedition; a flexible Catheter is to be preferred.

As the female Urethra is short & strait no Obstacle will arise to the Use of the Catheter but should Bougies be used, it will be requisite to endeavour to retain them in their proper Place & Situation by Means of the "T" Bandage.

1535. In Strictures of the female Urethra we can more easily succeed by the Use of Caustic than Bougies, from the Difficulty of retaining the latter, & from the Impracticability of their being passed by the Patient herself.

1536. When in Consequence of Obstruction to the Exit of Urine, Nature has made new Passages for that Fluids by the Ulceration of the Urethra & the Formation of Fistulæ in Perinæo &c we are to attempt the Cure by carrying in our Minds the general Principles of the Treatment of Stricture & also what has been already laid down concerning the Cure of new Passages form'd by an unskilful Introduction of the Bougie (1522).

1537. In this Case the Staff is to be introduced in the Manner before mentioned, upon which we are to cut down into the Urethra, then from the Urethra we are to pass a Probe or flexible Director into the Sinuses that lead from the Openings into the Urethra & lay them all open as far as we can follow them.

Q. As the diseased Parts are in general in a very diseased & callous State, we are not to be very delicate or sparing in using the Knife upon them, but if possible proceed so far as to make the several Openings into one & to cut the Urethra beyond the Stricture; if the Seat of the Stricture be not already destroyed by Ulceration.

1538. A hollow Bougie is then to be introduced into the Bladder & the Wound healed over it, but there is a Disadvantage attending the Use of the hollow Bougie, which is that its Bore is too small to admit of the Exit of the Urine with a Velocity proportioned to the Force with which the Bladder acts, &c.

Q. We have already considered the Consequences of a venereal Irritation applied to a secreting or sine cuticular Surface we now proceed to consider its Effects when the Matter is applied to a non secreting Surface or cuticular one, the primary Effects of which constitute the second Species of the first Genus, or local Disease.

1539. If any irritating Matter be applied to a secreting Surface, & the Irritation is carried to a certain Degree, then a Change of that Secretion and a Discharge of Pus or the suppurative Inflammation must take Place.

1540. Irritation to a certain Degree applied to a nonsecreting Surface, Suppuration must also follow, but that must be preceded by Ulceration.

1541. We see therefore, that if venereal Matter be applied to the Skin & its Application be continued a sufficient Length of Time, ulcerative Absorption of a small Portion of the Skin takes Place & a Chancre is formed.

1542. We have shewn, (1254) that there are three Ways in which a Chancre may be formed.

1543. The second Species, like the first, is generally caught in Coition, It is not so common as the first Species; we calculate that the first Species is contracted four Times for once that the second is, for the Cuticle, in general, prevents its Action on the Cutis, until the venereal Matter is somehow washed off.

1544. The Prepuce & Glans Penis are the ordina many Seats of it; but the most common is the Fraenum or the Angle between it & the Glans, & this from the Irregularity of its Surface.

1545. The Distance of Time between the Infection & the Appearance of the Chancre is uncertain it generally however makes its Appearance later than the Gonorrhoea.

1546. We have known a Chancre appear thirty six Hours after Coition; we have known seven Weeks elapse between the Time of Coition and the Time of Ulceration, we have known also an Interval of two Months.

1547. It begins with an Itching of the Parts affected, if the Seat be the Glans, there is not much Tumefaction, if in the Prepuce, there is a little Discharge from the Beginning, at least more so than when on the Glans, as being a laxer Part; the Parts ulcerate, or a small Pimple is formed, or a little Slough, especially if the Glans be the Seat of it, a little Hardness round about the Pimple or Ulceration is noticed.

1348. Should the Chancre be situated on the Body of the Penis, it generally begins with a Pimple, which breaks & being little Attended to at first, scabs, the Scab is then picked or rubbed off & a large one forms, here the Inflammation is more considerable than if the Chancre begins on the Glans if however than if it begin on the Prepuce, a Hardness generally surrounds it.

1549. The Canal of the Urethra often sympathizes with the external Parts as far at least as smarting, itching & tingling; whether a discharge will arise from this simply sympathetic affection, we do not affirm, in itself; however not all Gonorrhoeas which are preceded by a Chancre, are specific.

1550. The Sympathy of the neighbouring Parts with the Seat of the Chancre is sometimes so strong that even touching the Hairs on the Pubis will create Uneasiness.

1551. The Chancre will be attended with more or less Pain and Inflammation, according to the peculiar Habit & Disposition of the Patient.

1552. The local Disease will spread with greater or less Violence: sometimes considerable Sloughs will form early: there will be Gangrene of some Extent. The Ulceration will sometimes penetrate so deep as to open the Canal of the Urethra.

1553. The Prepuce is only a doubling of the Skin of the Penis, that it may be loose & convenient, for the erection: the Phymosis or Stricture confining it over the End of the Glans, so that it cannot be retracted is a frequent Consequence of Chancre.

1554. The Phymosis often precedes the Paraphymosis, & is in short frequently the Cause of the other, for Patients attempting to get the Skin, it will sometimes be made to slip behind the Neck, of the Glans, & will then take on a Stricture, strangulaing the Glans.

1555. The Phimosis in some Patients is so entirely pursed up the End of the Prepuce, as even to prevent the Exit of the Urine, after it has passed through the Urethra.

1556. In this Disease there is a thickening of the cellular Substance of the Prepuce & often an Adhesion is formed between it & the Glans.

1557. It has often for its Cause a Disposition of the erysipelatous Kind, accompanying the venereal Inflammation.

1558. The Phymosis if severe, produces such a swelling of the Prepuce, as shall press violently against the End of the Glans, & if there be Sores & Chancres underneath it, which is not uncommonly the Case, the Matter issuing from them will be confined, from which & from the Pressure on the Penis, the worst Consequences will ensue, even Mortification of the Penis.

1559. The Paraphymosis strangulating the Glans, will if not relieved, sometimes produce a Gangrene of the Part strangulated & even a Separation of the whole diseased Part.

Eg. A Young Man with Chancres had a Paraphymosis, he came into St. George's Hospital, the entire Glans & all the diseased Part gangrened & sloughed away, the Patient recovered.

1560. In Women Chancres are apt to be more numerous than in Men & to spread to a larger Size because the Surface they have to spread over is of larger Extent. In them the Perinaeum is more subject to Chancre than in Man, from the Facility with which the Matter will in them Chancres run down to that Part.

1561. Chancres are frequently attended with some Peculiarities, independent of the specific Affection, & therefore some Variety in their Treatment may be necessary; consequently it is requisite to attend to concomitant Symptoms & Circumstances whether local or of the Constitution.

1562. Two Modes of local Cure of the Chancre are practised, the one by Extirpation, the other by altering the Nature of the Irritation.

1563. In extirpation, the Object is not only to cure the Chancre, but also to prevent any Communication of the Virus to the System.

1564. Two Methods of Extirpation have been practised one by dissecting out the Chancre, the other by destroying the diseased Part by Caustic.

1565. When the Glans is the Seat of the Chancre, the Caustic is undoubtedly preferable.

9. Lunar Caustic is recommended, as most convenient, it should be pointed like a Pencil and the Sore touched with it once or twice a Day, until they assume a red & healthy Appearance of a common healing Ulcer.

1566. Chancres may be dissected off the Prepuce &c with a Knife; whether Dissection or Caustic be employed, it is proper afterwards to dress the Sore with mercurial Ointment, as by that Means we destroy any venereal Affection that may remain.

1567. Extirpation is improper when the Chancre is large.

1568. The other Mode of local Cure is by Means of oblining the Surface of the Ulcer which is done by mercurial Ointment, in which there is no Destruction of Parts, but only a Diminution of venereal Irritation.

1569. Mercury, although it does not cure the first Species, is a specific for the other, second.

9. Mercury is applied either in the Form of an Ointment or by Means of a watery Vehicle, the latter from its ready Miscibility with the animal Fluids, is probably most efficacious, but it should be a Rule to change the Application often, as any one Dressing will have its Efficacy diminished, or the Ulcer becomes more & more habituated to its Action.

1570. Chancres to their specific Disposition will often have superadded either Indolence or Irritability; in the former Mercurials should be mixed with stimulating Balsams, in the latter Mercurials should be mixed with Opium, & the oftener the latter are dressed, the better.

1571. If a Patient with a Phymosis cannot submit to keeping his Bed, a Circumstance to be desired, he should use a proper suspensory Bandage.

1572. Between the Prepuce & Glans an Injection should often be thrown, prepared either of Calomel, Gum Arabic & Water, or of mercurial Ointment, suspended by Mucilage of Gum arabic with Water, be tween the Times of injecting, Mercurial Ointment may be rubbed on the outside, sometimes a Poultice of vegeto-mineral Water & Linseed Meal, affords Relief.

1573. An Hæmorrhage the Consequence of Ulceration will sometimes happen, & is an extremely troublesome Symptom.

Q. Oil of Turpentine is the best styptic we are acquainted with.

1574. When the Inflammation abates move the Prepuce over the Glans frequently to prevent adhesions, which would subject the Patient to a permanent Inconvenience.

1575. Should it happen that an Ulceration of the Surface of both Glans & Prepuce has taken Place, we must then endeavour to prevent adhesion by the frequent use of injections thrown between the Glans & the Prepuce.

1576. If the Preputium be drawn much over the Glans & contracted, & the Opening of the Urethra be in a strait Line with the End of the Prepuce, pass a Bougie into the Canal, in Order to prevent the ill Consequences of the Passage of the Urine being obstructed by the Preputium adhering to the end of the Glans, & closing itself over the Orifice of the Urethra.

1577. In this Latter Case, or in Case the Orifice of the Urethra be not in a right Line with the End of the Preputium we must slit open the Prepuce & expose the Orifice.

7. Many have recommended us not to open the Prepuce by one longitudinal Incision the whole Length of it, but to make two Slits one on each side which they say will save the Necessity of making so long a Wound, but they have drawn their Reasonings from the natural Phymosis which will by no Means apply to the Phymosis from Disease, in which the Prepuce is very much thickened & incapable of yielding & stretching as in the natural Phymosis.

Whenever Disease makes it necessary to operate, the Prepuce should be slit up its whole Length.

1578. In many Cases the Operation for the Phymosis is not advisable, as where the Inflammation is violent or there is much Tendency to Gangrene, as the additional Violence of the Operation must tend to increase both.

1579. When Matter is collected & confined in any part from the adhesion of the Prepuce to the Glans, a Wound by a Lancet should be made & the Matter discharged, or if the Fears of the Patient object to the Lancet, a small Caustic may be employed.

1580. Mortification sometimes takes Place in Phymosis & we have seen Cases in which the whole of the Prepuce has sloughed away.

1581. Hence we may suspect a faulty Constitution & that the Inflammation was of the erysipelatous Kind.

1582. In these Cases Bark should be administered with Mercury, thereby attacking at once the venere all Infection & the constitutional Disposition.

9. It sometimes, however happens that Mercury increases the Tendency to Gangrene, under which Circumstance Bark should be administered alone;

1583. A Necessity for performing the Operation for the Phymosis will appear to arise.

1st When the Prepuce is so contracted over the Orifice of the Urethra as to become the Cause of hindering the Exit of the Urine; and

2d When added to this Inconvenience or without it the Matter from Chancres, concealed by the Prepuce, becomes confined & cannot be evacuated, or Evacuations made to the Chancres without dividing the Prepuce.

1584. An Operation for the Relief of the Paraphymosis becomes oftener necessary than in the Phymosis, & Danger of Gangrene too from this Stricture will more often occur.

1585. The Operation consists in drawing up the Integuments as much as may be with the Finger & Thumb & then passing a crooked Bistory through the most stricturated Part & bringing it through from within outwards.

1586. In Consequence of the Inflammation of the Prepuce in Phymosis or Paraphymosis, it will be often much elongated & thickened, so as to be much Inconvenience to the Patient.

1587. If by proper applications as the Steam of warm Water, the Fumes of Cinnabar, or Hemlock

Fomentations we cannot reduce [illegible], it will be right to perform Circumcision.

1588. Or we should at least remove as much of the Prepuce as projects behind the Glans taking Care, however, not to include any Part of the Glans in the Extirpation of the Prepuce, & in healing the Wound we should direct the Patient often to draw the Prepuce up & down to prevent the Cicatrix contracting & forming a Phymosis, or Stricture over the End of the Glans.

1589. Warts are no Sign of a Pox, they arise in Gonorrhoea from the Discharge from the Urethra touching any of the neighbouring Parts; Chancres heal with Warts, Warts have an increasing Power in themselves, often bleed & are frequently painful.

1590. Mercury has been applied for their Cure & it is asserted, will remove them, but our Experience does not warrant us to affirm this to be the Case.

1591. As being new formed Parts, it is evident that their Powers of supporting ~~Life~~ Action must be weak, by exciting a strong Action in them & the surrounding Parts by Means of powerful Stimulants, we may produce in them a Disposition to decay, or a more violent Action will be then excited than they are able to support.

1592. Rust of Copper, mixed with powdered Savine is found to answer this Purpose. /1591/.

1593. They may also be extirpated by Means of Li gative, Excision or Caustic, but it is often seen that by what Means soever they are removed, they will frequently sprout up afresh; in this Case a Repetition of the former Process will become necessary.

1594. Although Chancres may in general be cured by the local Means above described, yet the Introduction of Mercury into the System is advisable & generally to be insisted on, both as forwarding the Cure of the local Disease & as counteracting the Effects of Virus if absorbed into the System.

1595. As we have remarked (1356) some Variety will be necessary in the Mode of treating Chancres, according to the concomitant Disposition of the Constitution or the Part, & this internally as well as externally: Thus if there be a Disposition to Indolence, stimulating Medicines, as the Balsams with Mercury will be necessary, if to Irritability, Opium, Bark &c

1596. The Quantity of Mercury to be introduced into the Constitution, should be in Proportion to the Number of Chancres, their Size & the Time they have continued; it will be right to produce a slight spitting as a Criterion of the Mercury having acted on the System.

1597. Mercury may be carried into the System, as there from the Stomach or the Skin; when all the Hardness is softened & the Sore is skinned over, the Cure may in general be supposed to be accomplished.

1598. This Rule should however be applied to a large rather than to a small Chancre, for in the former the Virus must in general be destroyed before the Chancre will heal yet in the latter the Sore will sometimes skin over before the venereal Virus is destroyed.

1599. It is better for the most Part to continue the Mercury for some Time after the Chancre is healed, to prevent any further Action of the venereal Virus by Means of the Constitution.

1600. Chancres in Women should frequently be washed with Solutions of corrosive Sublimate, & mercurial Ointment should be applied to them.

1601 The Quantity of Mercury admitted into the Constitution should be greater in them than in others, because their Chancres are commonly larger & more numerous.

1602 When the Ulcers spread considerably, if the Seat of them be in the Vagina, some extraneous Body or Lint &c should be kept between the Sides to prevent their cohering, straightning & closing the Passage through the Vagina, an Accident which has been known to take Place

1603. New diseased Dispositions not venereal may arise during the Cure of Chancres & remain after the venereal Virus is destroyed.

1604. In some there will be a diffused Inflammation of a purplish Hue, about the Sore, which will be rugged & assume a cancerous Appearance, these have been commonly considered as Cancers, but for the most Part only scrophulous. In others there is a Swelling & Hardness with an indolent Disposition.

1605 – freely used in these Cases has proved serviceable, the Lisbon Diet Drink, has also been found of singular Utility: Extract of Hemlock has done Service, so has Sea bathing & Opium used externally; if the Disease extend near to the Orifice of the Urethra, Care should be taken to prevent its closing, by Means of a Bougie; Extirpation of the Diseased Part, if indolent, may sometimes be requisite.

1606. The Cicatrices of Chancres after all the Virus is eradicated, will sometimes break out again, such are generally but falsely considered as venereal, the Cure of these Ulcerations is uncertain.

Q. Mr Hunter has once known them to break out in two Months; these Ulcerations do not always appear immediately where the original Chancres were situated, but at a very small Distance from the Cicatrix.

1607. We recommend Sea bathing as highly useful in this diseased Affection, having experienced its Efficacy in such Cases.

1608. From whatever Surface the venereal Virus is absorbed, the Effect is ultimately the same.

1609. The Constitution may be affected by venereal Virus in four Ways.

1st By venereal Matter applied to a Surface & absorbed into the System, without any previous local Effect.

2d By Gonorrhea.

3d By venereal Ulcer whether Chancre or Bubo.

4th By a Wound.

The most general Way by far is the third, the first scarcely ever happens.

9. Mr Hunter calculates the Proportions of Infection in the second Way to the first as 100 to 1. & the third to the second as 100 to 1 also.

1610. The venereal Matter being taken up /1609/ by the Absorbents, may, previous to any constitutional Affection give Rise to the Bubo or local consequent, /1252 – 1263/.

1611. The venereal Bubo may be divided into

a That in which the absorbent Vessels themselves being contaminated, are the Seat of the Disease.

b Where the Lymphatic Gland in the Line of Absorption in the Part affected.

1612. The first way rarely occurs when it does it is known by its Resemblance to a hard Chord, running along the Dorsum Penis, & leading to a Gland.

1613. The Hardness is occasioned by a thickening of the Coats of the inflamed Vessels; the Absorbents sometimes suppurate, & form a Chain of Abscesses along the Penis, similar to the Abscesses of Veins /543/ when suppurating they are to be considered as Chancres.

1614. The first Species is so rare, that it is not noticed in speaking generally of Bubo, (1252)

1615. In the second Kind, which we commonly call Bubo, the venereal Matter is carried by the Absorbents to the nearest of the Lymphatic Glands.

1616 The Lymphatic Glands consist of a Convolution of Vessels, constructed so as very much to favor the Stay of venereal Matter in them a sufficient Time to produce their Contamination.

1617. The Lymphatic Glands nearest in Order to the Source of the Matter, are the Parts affected, those of the second in order scarce ever.

Q. First in Order - - - - Inguinal.
Second in Order - - - - Glands of the Back.

It would appear from this that the Matter is diluted in its Passage, the more probable Reason, however, is that the second in Order are not so easily irritated as the first being deeper seated.

1618. In Men the Seat of the Bubo will in the Lymphatic Glands of the Groin, but as the Situation of the Lymphatic Glands is not always the same precisely, & the nearest Lymphatic Gland will not be in the Groin, but just above Poupart's Ligament, near to the Os Pubis, that will sometimes be the Seat of the Bubo.

1619. In Case the Bubo arises from Gonorrhoea, the Seat of the Tumor may be on either Side, if from a Chancre the Bubo will form on the same Side with the Chancre, but if the Chancre be in the middle of the Penis, then the Bubo may arise on either Side.

1620. In Women the Surface of Corruption being larger than in Men, there are three different Parts which a Bubo may occupy, & that dependent on the State of the Chancre.

1621. If the Chancre appear on the Labia or Nymphae; the venereal Matter will [illegible] on when absorbed in the Course of the Ligamentum rotundum, & just below where that Ligament enters the abdominal Ring, the Bubo will form but never within the Ring.

1622. This Bubo we refer to the first kind, not considering it as glandular, but as an Inflammation of the absorbing Vessel only, & this strengthens our Opinion that deep seated & internal Parts are not readily susceptible of the venereal Irritation, & that a Bubo can only be external, 1617.

1623. If the Chancre be situated farther backwards, then the Bubo will form between the Labia & the Groin, or as in Men in the Groin.

1624. Absorption of venereal Matter goes on more readily from some Surfaces than from others; e.g. it is more frequently taken up from the Praeputium than from the Glans Penis.

Q. This is because the Surface of the Glans approaches nearer to a secretory Surface than that of the Prepuce: We see absorption goes on slowly from secreting Surfaces.

1625. The first Notice given to a Patient of the Formation of a Bubo, is a Sense of Pain in the Part affected in which upon Examination he feels a hard Tumor.

1626. This Tumor is generally of the common inflammatory Kind & often advances to Suppuration speedily.

1627. Sometimes the Tumor is more of an indolent Disposition, & then will be long in coming to Maturation.

1628. When the Bubo is of the truly inflammatory Kind, the Pain attending the Suppuration will be very considerable; when of the indolent Nature, it will be less acute, more dull & heavy; a Disposition to Indolence especially prevails in Patients of scrophulous Dispositions.

1629 The Inflammation of the Bubo will however, sometimes be found of the erysipelatous Kind, & then though the Pain may be considerable, the Inflammation will not be considerable & the Part oedematous.

1630. Inflammations & Swellings of the inguinal Glands are not always venereal; great will be the Difficulty, however, sometimes in ascertaining the Nature of an inguinal Bubo.

1631. If a Gland in the Groin swell without visible Cause, be painful & go on to Suppuration quickly, venereal Matter should be suspected & Mercury given, as in Cases of Chancres.

1632. But if the Tumor have an indolent Nature with a cold & feverish Disposition, & arise without any visible Cause; we may, for the most Part, consider it as scrophulous.

Q. It is however, doubtful whether we do not often meet with Cases in which the venereal Disposition is mixed with the scrophulous; in this we are to attack the predominant Disposition be it scrophulous, or syphylitic

Case.

Colonel W— had a Gonorrhoea preceded by Buboes, which suppurated, they were opened, & for a Time went on healing kindly, but at length became stationary. Mr Hunter suspected that a new Disposition was taking Place, therefore ordered Seabathing &c, when the new Disposition which was scrophulous abated, the venereal Disposition increased, so that it was necessary to return to Mercury.

1633. Buboes both in Men & Women are entirely local & are no more connected with the Constitution than the preceding local Affection of which they are the Consequence.

1634. They are not critical Deposits from the Constitution, as has been by some supposed.

Q. If Buboes were critical Deposits from the Constitution, why do they not arise in some other Glands, as those of the Neck &c & not in the sympathetic Glands of the Groin, & always in the nearest to the Source of Absorption; again, if critical, why should it be necessary to administer Mercury when they form.

1635. In order to the Cure of Buboes, after having ascertained their being venereal, we have Recourse to the Exhibition of Mercury.

1636. We are always to desire the Resolution of the Bubo & to avoid Suppuration, for the Bubo when it forms Matter is similar to a Chancre & has equal Power of contaminating the System.

1637. It is necessary to observe that in the Cure of the Bubo, Mercury should be employed, but as that will only destroy the specific Disposition of the Gland, it is necessary to attend also to the Nature of the concomitant Inflammation, whether common, scrophulous, or erysipelatous.

1638. In the first we have Recourse to bleeding & purging according to the Violence of the Inflammation;

For the second, or scrophulous, Cicuta, Sea bathing &c.

For the third — Bark.

1639. Vomiting has been known to produce Resolution of the Bubo, even when Suppuration had taken Place; acting upon the Principle of Revulsion, Vomits also powerfully excite the Action of the Absorbents.

Q. A Gentleman had a Suppuration considerably advanced, he went to Sea, the Sea Sickness came on & the consequent vomiting caused an absorption of the Matter & the Cure of the Abscess.

1640. In the Case of Bubo we can much increase the Powers of our Remedies by the Manner of applying them, & it should be a Rule to endeavour to produce an Action of the Mercury in the Part, before we produce its action on the System.

1641. We should therefore cause mercurial Ointment to be rubbed on the Surface from which the Absorbents begin, that pass through the affected Part, & as near the Part from which the first Absorption of the venereal Matter, as may be, thus introducing Mercury into the System by the same Road which the Virus pursued, & as it were making the Antidote tread on the Heels of the Poison.

4. Thus if a Chancre on the Prepuce preceded the Bubo, mercurial Ointment should be rubbed on the Line of the Penis, where the Chancre formed itself & on the inside of the Thigh, on the Scrotum Belly &c as the Lymphatics from these Parts take their Rout through the inguinal Glands.

1642. By the early Use of Mercury in the Manner recommended (1641) the Suppuration of Bubos will commonly be prevented, but should they notwithstanding happen to form Matter or should the Matter be formed before the Surgeon is consulted, Mercury should be used during the whole Time of Maturation though in a more moderate Quantity than before, as well as after the Bubo is opened or has burst.

Of all the Patients Mr Carter has had under his Care for sixteen Years, past only three have had Buboes, which suppurated that is of those who applied to him at the Commencement of the Bubo.

1643. If the Bubo be to be opened by Art, the Skin should be permitted to come exceedingly thin, before the Operation is performed, that a Suppuration may have taken Place to heal from the Bottom, previous to exposing the Abscess.

1644. The Opening may be made either by the Lancet or by Caustic, according to the Inclination of the Patient; it should however be recollected: When left to the Choice of the Surgeon, if the Skin be very loose he may use a Caustic, & the Lapis infernalis is to be preferred; if the Skin be not loose, the Lancet is best, as thereby none will be destroyed; the Wound is to be dressed according to the Nature of the Discharge.

1645. Mercury should be thrown into the Constitution, during the whole of the Time, from the Ulceration, untill after the healing of the Bubo, or at least untill the Bubo has lost its venereal Appearance, which the experienced Surgeon alone will be able to determine.

1646. Some Exceptions to this, are, however, found to arise; sometimes the Bubo takes on a new diseased Disposition, which Mercury increases, the Sore will continue obstinately spreading, and the more freely Mercury is diminished, the more Progress the Ulceration will make. In this Case we perhaps have a scrophulous or scorbutic Habit to encounter, & we shall find Benefit, probably from the Use of Hemlock & Antiscorbutics, & from Orange & Lemon Juice.

4. Sir William Fordyce first recommended Orange & Lemon Juice, which Mr. Hunter has since prescribed to Advantage, both Barley Water is in Use at the Lock Hospital & sometimes Orange Juice.

1847. In some of these Cases we have found no Medicine of any Utility, but the Disposition has at length worn itself out & the Ulcer healed.

9. Case.

A Gentleman had a Bubo which was opened, he used Mercury three Months, still the Ulcer continued without the least Disposition to heal. Mr. Hunter considering his Constitution as the more of a mercurial one, & therefore little affected by that Remedy, he left it off, & confined him to Milk Diet &c. for some Time; he then returned to Mercury again & continued its Use for two Months, when the Ulcer became stationary; he then again discontinued it, returned to the Milk & gave Cicuta, the Ulcer was stationary, the Sinuosities were laid open & the Patient was sent to Sea, he pursued this Plan four Mon-

and returned home without Benefit: Mercury was again more effectually administered, the Patient at last left off the Medicine & at length got well.

1648. Another Exception to the constant use of Mercury, is that the Patient's constitution may become so habituated to it, that it shall lose its Power of acting as a Specific; in this case we should discontinue the Mercury for a few Weeks & then have Recourse to it again.

1649. As the venereal Disease may be communicated by other Means than coition, so Buboes may be formed in other Glands as well as in those in the vicinity of the Parts of Generation; if the Infection were received in the Lip, the Bubo would be seated in the Neck; if venereal Matter were absorbed from an Ulcer or wound in the Finger, we should find the Bubo in the Axilla.

1650. In the cure of these the same Principles is to be kept in view, as if they had formed in the groin. 1636—1640.

1651. Some Uncertainty must prevail as to the due Quantity of Mercury necessary to be used for the Removal of Buboes; where the Resolution is obtained, the Quantity of Mercury should be pushed so as to affect the Mouth, in general we may begin with half a Drachm of Ointment & increase or diminish according as the Bube is affected by it.

1652. When the venereal Virus has been absorbed into the Habit, & the second Genus arises a Variety of Appearances are produced, & these will be according to the following Circumstances.

1653. – 1st The Time since it was absorbed into the Constitution.

2d The Peculiarities of the Constitution.

3d The different Solids affected by it.

4th The different Dispositions the Solids were in when they first became affected with it.

1654. The Time in which the second Appearances take Place after the Infection, depends upon the Nature of the Constitution; at a Medium the Period is found to be about six Weeks, in some it is sooner, in others much later.

Q. A Case occurred in which almost the whole Body was covered with general Eruptions after the breaking out of a Chancre.

1655. The deep seated Parts, or Parts second in Order of Susceptibility (1298) do not always come later into Action than the superficial Parts (1297). as we have known the Periosteum to become diseased without any previous Affection of the Skin or Throat.

1656. We have accounted for the Reasons why Parts shall fall into the venereal Action, after other Parts labouring under the same disease

Action shall be cured. (1303. 1304.)

1657. We have also shown that venereal Matter does not continue circulating in the Blood for any Length of Time, that the Secretions are not contaminated by the venereal Matter, nor the Blood rendered capable of communicating the Infection to other Persons. But that after the Absorption into the System, it circulates for a short Time with the common Mass of Fluids, gives a venereal Disposition to the different Solids, having first undergone a Change in its Nature, & is soon thrown out by the different Excretions.

1658. The first appearance after Absorption is generally upon the Skin, Throat or Mouth, the Appearance in the Throat often precedes the other.

1659. In some the Eruption upon the Skin appears in distinct Blotches, not very observable untill Scurfs are forming upon them, at other Times as small Pimples with Inflammation & the Pimples filled with Matter.

9. In some Persons Copper coloured dry Scurfs, or as it were, Cuticles appear, which were thrown off from Time to Time & spread at Times to the Size of a Sixpence.

1660. When Skin is opposed to Skin as in the Axilla &c, the above described Appearances never take Place, but the Skin rises white & smooth, & a whitish Kind of Matter is secreted, & they are attend ed with more Pain than the former. Whether this attends the Disease in Question only, we will not pretend to say.

1661. The Hair falls off the Parts that are attacked with it, & so long as the Disease continues the new Hair cannot grow. The Fingers are sometimes the Seat of the Disease, & then the Nails fall off.

1662. When the Throat, inside of the Mouth, and Tongue are the Seats of the venereal Action, an Ulcer rapid in its Progress, but without much Tumefaction is formed; it is foul & has thickened or bordered Edges, but this is a Circumstance attending all Sores that have no Disposition to heal.

1663. These Ulcers are painful, though much less so than common Inflammation of these Parts, & oblige the Patient to speak thick & snuffle.

1664. The Matter secreted upon them, does not remain to form a Scab, but is washed off in swallowing.

1665. The Eyes sometimes become the Seat of this Disease, & a venereal Opthalmia is produced, which with Difficulty can be distinguished from the common Opthalmia.

1666. When the Disease has been affecting the Constitution for some Time, then the Parts second in Order may show the Action of the Virus, or the same Effect may occur, when it had first appeared in the external Part, & the Diseased appeartances there have been cured.

1667. A total Deafness is not uncommon at this Time, now & then attended with Pain & Suppuration in the Ears.

1668. A Node often appears several Months after any possible Infection, the Progress of this is very slow, & the Consequence of any Suppuration is a very sliming Matter instead of Pus.

1669. When the Periosteum becomes affected, the Pain is very considerable, but not always so.

1670. Nodes will sometimes continue several Years before they come to Suppuration, the Inflammation being very slow.

1671. Venereal Pains are periodical, being more particularly severe at Night, & in this Respect they resemble rheumatic.

1672. The Effects of the venereal Disease upon the Constitution are similar to the Effects of all other Irritations, whether local, or constitutional.

1673. In some a slow Kind of nervous Fever, with Loss of Appetite is produced, as there are Rigors, frequent hot Fits, Head ache, &c.

1674. In the Cure of this Disease it may be considered as in two Extremes, not different in their Nature, but requiring a more mild or more severe Treatment.

1675. In the first Genus our Senses will generally inform us, when a Cure is completed, but in the second Genus we labour under great Difficulties, as the Virus has circulated in the Blood, & we know the contaminated Solids only by their shewing a diseased Action.

1676. The Effects arising from the Constitution are local & may be cured locally, but as other Parts may have received the venereal Disposition, although they have yet not come into Action, we must attack not as now containing the Poison, but as the Vehicle carrying the Specific through all the Solids of the Body, curing present diseased Effects & destroying Dispositions which would have produced future ones.

1677. It is not clear whether Parts which have first been attacked are easier to cure than those which took on diseased Action later.

1678. If Parts be susceptible of Cure in Proportion to their Susceptibility of diseased Action, then the Parts which are second in Order being cured, it must follow that the Parts first in Order must have their diseased Disposition & Action removed.

1679. The second in Order may appear diseased, when the first have been cured, but the Order is rarely reversed.

1680. Mercury is the true specific Remedy for the Disease, & none other whatever can be depended on; when taken into the Constitution it circulates with the Juices, cures those Parts which are Diseased & little affects those which are not.

1681. There are two Modes of Administering it, namely,

By the Stomach.

By the Skin.

1682. Like other Substances it is more readily absorbed from some Surfaces than from others.

Q. Mr Hunter observes that a smaller Quantity of Calomel is sufficient to salivate by the Bowels than by the Skin, & again that mixing Precipitate to Snuff has salivated Patients.

1683. In the Administration of Mercury it is necessary to consider.

a The Constitution of the Patient.
b The Quantity of Mercury necessary.
c The Preparation that will best agree with the Patient.
d The Mode of giving it.
e The Regimen necessary to be observed by the Patient during his mercurial Course.

1684. As to the Constitution we should endeavour to learn whether it be more disposed to Irritability or Indolence, if possible whether it be easily or difficultly affected with Mercury, & again the Time the Constitution has been contaminated.

1685. With Respect to the second Circumstance belonging to the Constitution, we may, in general, Nor the History given us of the Degree in which it has been affected by a given Quantity of Mercury on any former Occasion, is a Guide for our Practice; for it rarely happens that the Constitution varies much in this Particular.

1686. The Quantity of Mercury must be equal to the Violence of the Disease; but it becomes necessary at the same Time to consider the Period of Time within which a given Quantity is introduced into the System, & the Effects of that Quantity on the Constitution. Thus one Ounce of mercurial Ointment rubbed into the Skin in two Days, will have more Effect on the Constitution & Secretions, than two Ounces rubbed in within ten Days.

1687. A large Quantity of Mercury being introduced into the System, a sudden Stimulus is given, & its Effects are rendered mostly local, consisting in the unusual Excitement of some Secretion.

1688. But if we introduce the Mercury slowly, a very considerable Quantity may be thrown in, without visibly affecting the Constitution.

1689. From a Knowledge of these Circumstances we find Mercury a safer & more manageable Remedy than it was supposed to be.

1690. Mercury when first applied affects the System much more readily, than when the Pati

-ent has been some Time accustomed to its Use, we are therefore enabled by beginning with a small Quantity & going on gradually to throw into the Constitution a much larger Quantity than could either otherwise have been borne by the Patient.

1691. If given with Care so as to avoid stimulating any secretory Part to Action & thus producing Evacuation, any Quantity of Mercury may be introduced that the Disease can require.

1692. The Effects of Mercury are generally in the following Order.

1st On the salivary Glands.
2d On the intestinal Glands.
3d On the Skin.
4th On the Kidneys.

1693. These are sometimes affected singly, sometimes more than one, sometimes all together.

1694. Soreness of the Mouth most commonly though not always, attends the increased Secretion of the salivary Glands.

Ib. All Parts do not become sore together, but gradually; the Lips may alone become thick & inflamed & the Cheeks, or Gums become sore.

1695. Evacuations by any of the Secretories are of no Use in curing the Disease, they only shew the Susceptibility of the secretory Organs to be affected by the Remedy; however, they afford some Evidence of the Constitution's being acted upon by the Mercury.

1696. If the secretory Organs be too susceptible of the Stimulus of the Mercury, it will be difficult to cure the Disease; because the Patient will not bear a sufficient Quantity of the specific to be introduced into the Circulation.

9. A Gentleman had a Chancre & a Bubo, he rubbed in mercurial Ointment once, his Mouth became affected, a slavering came on, the spitting was kept up during a Month; in which Time the Chancre & Bubo got well: Soon after his Throat became affected with the Disease, this Mr Hunter attributed to the too great Susceptibility of Stimulus in the salivary Glands, which suffered the Mercury to be evacuated so fast, that it had not Time or Power to affect all the other Parts of the System.

1697. The too ready Susceptibility of any secretory Organ should be obviated by proper Astringents, hereafter to be mentioned.

1698. Mercury can act only upon the Constitution & upon the Poison.

1699. Upon the Poison either by destroying its Properties & decomposing it; or.

a By attracting it & carrying it out of the Circulation, together with itself; or

b By counteracting the venereal Irritation & producing a new & opposite Irritation.

1700. If the latter Conjecture be true, then the readiest Way of curing the Disease must be giving Mercury so as to produce visible Effects on the Disease, yet in such a Quantity as to produce a different Disposition in the System.

1701. It should be given slowly, so as to produce at length some local Effects, yet, however, in such a Manner, that a Quantity may be introduced into the System, sufficient to cure the Disease.

1702. As a general Rule it is right & necessary to give Mercury in such Quantities as shall produce good Effects on the Disease, yet no ill ones on the Constitution & to continue its Exhibition untill some local Irritation is produced.

1703. Of the two Modes of throwing Mercury into the Constitution, if the Patient's Way of Life & Circumstances render it convenient, that of rubbing it into the Skin is most eligible & most certain in its Effects.

1704. If the Patient have been unused to Mercury, he should begin with a Scruple or half a Drachm of the Ointment, & rub that Quantity in every Night for four or six Nights, & then he may increase the Quantity to a Drachm, & so on gradually untill two Drachms are rubbed in every Night.

1705. If the Symptoms disappear gradually, it is right in general to continue the Medicin a Fortnight after their Removal.

1706. When the Mouth becomes affected with the Mercury we must suspend its Administration, untill the Soreness abates.

1707 If the Mercury run off by any of these Secretions, they should be restrained, no Danger arises from checking a too violent Secretion, although that increased Secretion does not arise from the Constitution.

1708. Sulphur has certainly been serviceable in diminishing too violent a Secretion of the salivary Glands; in what Manner it produces this Effect we do not determine; it can only act upon the Mercury after the latter has got into the Blood; probably it is a Kind of antimercurial Stimulus: Has it any Powers of chemically combining with the Mercury in the Circulation?

1709 We should distinguish a mercurial Salivation from a Salivation which goes on from Habit after the Mercury is evacuated.

1710. Purging has probably no Power in diminishing a mercurial Salivation.

Q. Should it be found that purging has any Power in diminishing Salivation, it might be right to give Sulphur in sufficient Quantities to ~~act~~ a purgative.

1711. Sulphur certainly enters the Blood unchanged as Sulphur.

1712. Should the Secretion by the Bowels be violent, we restrain it by Opium, which seldom fails in removing the Irritation of those Parts, the violent Action of Mercury on which is by far more dangerous than on any of the other secretory organs.

1713. Mercurial Sweatings or Evacuations by the Skin we check with most Success by the Use of Peruvian Bark.

1714. The increased Secretion of the Kidneys is not near so troublesome as the others; Bark may be given as its Corrector; but it will sometimes go on whatever Means are used to check it.

1715. Mercury probably cures most of the Symptoms of the first Stage locally that is applied to the Parts by Means of some of the Secretions; thus it probably cures the sore Throat locally, the Saliva loaded with Mercury proving an antivenereal Topic; so also in cutaneous Affections being applied to the Skin by Means of the Sweat.

1716. Mercury cannot act upon the venereal or any other Disease, but in a State of Solution & that in the animal Juices.

4. Mercury cannot act in the Body as it does out of the Body, all the Preparations of it undergo a Change, & after being taken into the System, a new Combination peculiar to the animal Body is formed, & that is the same whatever

ver be the Preparation of Mercury employed.

Did Mercury act when in the System as it does on the primæ Viæ or applied externally, the Preparations would have different Effects; E.G. Turbith mineral when in the Blood would act as an Emetic in the same Manner as Ipecacuanha does when thrown into the Blood Vessels; but all the Preparations of Mercury after they are dissolved in the animal Juices, form one particular Combination, when dissolved in the Saliva they have all the same Taste.

Mr Hunter held crude Mercury in the Mouth for some Time, it was very slow in giving the proper metallic Taste to the Saliva, which shows that it dissolved in the Mouth & gave the same Taste.

Calomel did the same, corrosive Sublimate held in the Mouth for a Time, the acid Taste was prevalent, but that going off; the proper mercurial Taste, similar to that of Mercur: calcin: Argent: viv. took Place; introduced by Means of the Skin into the System, they have all one common Effect, though some are quicker in producing that Effect than others.

1717. It is however certain that different Preparations of Mercury will produce Effects upon the Sy tions & upon the secretory Organs at different Periods of Time, & will affect different Individuals in different Manners, & that those who are not cured by one Preparation of Mercury will by another; therefore it is right to try different Preparations when the Disease is obstinate.

1718. All the Preparations of Mercury are readily soluble in Saliva, Mercurius calcinatus is the most simple & most easily dissolved in the Mouth; mixed with a Quantity of Opium it makes one of the most efficacious internal Remedies.

1719. Calomel is in Proportion as to strength & its Effects on the Constitution to Mercurius calcinatus as one to three. One Grain of calcined Mercury is equally powerful with three of Calomel.

1720. Corrosive Sublimate is a powerful Preparation of Mercury; its action in curing any diseased Part is mostly local, as being carried to them by Means of some secreted Fluid; it cures Ulcers in the Throat sooner than any Medicine, acting perhaps as a Gargle. A Cure by it however, is not to be entirely depended upon, as it does not seem to have any great Powers on the Constitution, & Relapses more frequently happen after a supposed Cure by corrosive Sublimate, than we by any other Preparation of Mercury.

1721. For so small a Quantity of Mercury only, when we use Sublimate can be introduced into the System to effect a proper Change of the Constitution, it is so readily passed off by the Skin &c

1722. Crude Mercury divided with any Substance by Triture is the weakest of all the mercurial Preparations; fifteen Grains of it being only equal to one Grain of Mercurius calcinatus.

1723. A Grain of calcined Mercury may be taken every Night, for five six or seven Nights; if no Affection of the Mouth be thereby produced, the Quantity may be increased.

1724. Either of these may be joined by Gum Guaiacum [illegible] in a Dose & will in general produce a Cure of the Symptoms in a Month.

1725. If the Symptoms disappear suddenly, for Instance in the first eight Days, it will be still right to persist in the Use of the Remedy, a considerable Time, & even when the Suppuration gradually decreases, it will not be improper to persevere in the Use of the Remedy for a Fortnight afterwards, & this whether the external or internal Method be employed; for we should always consider the Danger of leaving uncured a venereal Disposition in some Parts not yet come into Action. In the first Stage it is much easier to cure the Symptoms than to rid the Constitution of the specific Disposition.

1726. If Mercury be given internally in a solution as Sublimate, or formed into a Salt with any Acid it may meet with in the Stomach, Regard is to be had to the Irritation it may produce on the Stomach & primæ Viæ; if they be disposed to Irritability, Opium & essential Oil may be administered with it, or alkaline Medicines accompanying its Exhibition.

Q. Is it with this View probably that Mercurius

is prescribed.

1727. In general if Mercury be properly administered the Constitution may be cured in six Weeks.

1728. In the second or worst Stage as Affections of the Pericraneum, Tendons, Ligaments & Bones, a more severe Course is to be pursued, & Mercury is often required to be given in the largest Quantities that the Patient can with Safety bear.

1729. Here we must begin with a large Quantity at first, in order as it were to surprize the System & we should produce a sensible Effect in five or six Days, & a Soreness in the Mouth in twelve Days; then the Quantity of Mercury employed will be so great that it is scarcely possible to prevent a Salivation.

1730. In this Case, more Attention will be required to the Patient's Diet, as he will not be able to eat solid Food from the Soreness of his Mouth & yet will require his strength to be supported, aged Wine, Sago &c will be proper Drinks.

1731. In our Use of the Mercury we are to observe that in this Stage it is more to cure the Constitution than the local Disease, & therefore it is not necessary to persist in the Use of Mercury untill all the local Complaints are removed, as the Parts may remain in a diseased State after every venereal Disposition is removed.

1732. Topical Remedies will be useful in this Stage, as will readily be perceived from 1731.

1733. Previous to beginning the mercurial Course we must make the same Enquiries as are directed to be made preparatory to a less severe Course ( ), that is whether the Patient has heretofore taken Mercury, whether lately, & in what Quantities.

1734. If he have lately taken Mercury & this is to be considered as the Continuation of a Course already begun, we must begin with a large Quantity as two Drachms of Ointment, rubbing the same Quantity into the Skin every Night, if the Patient can bear it, or even increasing it to ʒiii, or if he have heretofore borne a large Quantity of Mercury without Inconvenience, we may proceed with similar Boldness.

1735. But if the Patient have not been used to Mercury or be weak & irritable, we must proceed with more Caution. One Drachm of Ointmment is as much as we should venture to employ.

1736. Mercury in any Stage can only cure the Constitution by being absorbed into the System. This we must be aware of, & therefore if the Surface of the Skin will not absorb it, we must give it internally; if the Absorbents of the Bowels will not take it up, no more than those of the Skin, the Case of the Patient is really deplorable, the Cure impossible.

1737. Some particular local Affections in this Stage deserve Attention, as

Nodes.

1738. If the Affection of the Periosteum or Bone have proceeded no further than Inflammation & Swelling, in general no particular Application is necessary, but the venereal Virus only will be required to be destroyed.

Q. We perhaps shall not be surprized at the Length of Time which may elapse between a venereal Disposition being given to a Bone & the Time of its Action on a Bone appearing; for we see not only that the venereal Virus is slow in its Operations, but that Processes of all Kinds in Bones go on with Tediousness & Difficulty.

1739. Sometimes, however it will be otherwise, then they may be covered with mercurial Plaster, or rubbed with the Ointment, the latter is best.

Q. Why does mercurial Ointment cure Nodes?

It cannot be by the Mercury acting locally by Contact, it must be either by Means of the System or by Sympathy.

1740. If these do not succeed we must try the Effect of a new Inflammation; Blisters applied round the Node have removed the Pain & expedited the Cure. If Blisters fail an Incision should be freely made in the diseased Part, that by the Process of Inflammation a new Disposition may be formed in the Parts & the Nature of a common Sore produced.

1741. As Parts may remain in a State of Disease after the venereal Virus is destroyed & the Constitution cured, we may often very safely leave the Nodes to Time, which will not uncommonly effect a Cure, but sometimes however a particular local Treatment will be necessary.

1742. Nodes are often treated with Caustics, which seldom produce good Matter, but generally a Kind of Slime or Mucus which lies flat on the Bone, & renders it difficult to determine whether there is a Fluid underneath & of what Kind. In this Case there is but little of the adhesive Inflammation.

1743. Inducing Violence of Action in the diseased Parts here, facilitates the Cure by destroying the present Irritation, we should therefore make free Openings. Exfoliation may more readily take Place in Bone affected with the venereal Disposition, than with any other Dispositions because here we have a specific Remedy by which we can correct the present Disposition.

1744. When a Node occurs in a Tendon, if blistering do not relieve, the Same should be laid open, as a ground Work is laid for a very obstinate & disagreeable Swelling, which will neither yield to Time nor Medicine, & must therefore be attacked locally.

1745. As in the other Cases, so here also, new Dispositions may be taken by the Parts affected, which it may be difficult to distinguish from the venereal Disposition, & therefore may render it difficult to determine, when the Cure of the venereal Virus is effected.

1746. To those new Dispositions Mercury may be a Poison, increasing instead of lessening the Evil, many of them will take on a cancerous Appearance.

Q. A poor Woman in St James's Workhouse had venereal Complaints for which she underwent a Course of Mercury; she had Ulcerations in her Face which took on a new Disposition, seeming cancerous: Hemlock was applied internally & externally, & she got well after having lost Part of her Nose & Part of her right Cheek; in twelve Months she relapsed, Hemlock & other Means were tried in vain, for she died of the Complaint.

1747 Ulcers in the Mouth & Throat often arise during the Use of Mercury, these should be distinguished from venereal Ulcers & treated with Bark & Opium, as Gargles.

℞. One Drachm of Opium dissolved in ___ Water makes a very useful Application to venereal Ulcers.

1748. In some Persons the long Use of Mercury is followed by great Debility of Constitution, with all its Effects, as profuse Sweating, an Inclination to Hectic &c. In this Case the general strengthening Plan is to be pursued, Bark is useful, but is no specific. Sarsaparilla seems to have something to do in the present Case, & this is rendered the more probable by the Disposition giving Way.

1749 Sarsaparilla has no Power over the venereal Virus, it is however very useful & seemingly a specific for many of the new Dispositions taking Place after the Virus is destroyed. It may be of Use in preventing the Formation of such Dispositions & may be exhibited with Mercury. It is best taken in Substance & in large Doses, or its Extract may be given.

℞. Mr. Hunter has given Powder of Sarsaparilla mixed with some farinaceous Substances made into a Pudding, that the Patient may take it in very large Doses.

1750 Guaiacum has some specific Power over the venereal Disease, how far these Powers extend is not ascertained. We can however place no Dependance on this Remedy in various Cases. Mercury is the only true & universal Specific, on it alone can we depend, for it will cure in Despight of every unfavourable Circumstance as Irregularities in the Patient, Intemperance, Climate &c.

C. A young Man had venereal Eruptions and Ulcers in different Parts of his Body, under the Arm Pits, on his Thighs, Scrotum &c. some were of the Size of a Halfpenny, a Poultice of Gum Guaiacum was applied to the right Arm Pit & a Poultice of Sarsaparilla to the left, renewed every Day & continued for a Fortnight; the Sores in the right Arm Pit were cured, those in the left rather worse; left off the Sarsaparilla & applied the Guaiacum to the left, which then healed in a Fortnight. Gum Guaiacum ʒß joined with Opium was given three Times a Day, by which Means all the Eruptions disappeared in a Month. He was allowed to stay in the Hospital two or three Weeks after his seeming Cure, at the End of which Time Eruptions again appeared; Recourse was again had to the Guaiacum, but it had lost its Powers. Mercury cured him; this shews that Guaiacum has some specific Powers, though weak ones, over the venereal Virus.

Mercury properly applied is the only true Specific. Mr Hunter does not object to his Patients indulging in the usual Diet, or taking their usual Exercise, they may indulge in the Sports of the Field by Day & the Bottle at Night.

1751. Hemlock is frequently of Utility in many of the raw Dispositions which form during or after the ~~course~~ cure of the venereal Disease, especially in such as in their Appearance give Cause to suspect a Cancer.

1752. A Salivation will often go on from Habit, long after the Mercury is eliminated from the System; it will sometimes remain for Months, though this is now known rarely to be the Case, as the Mercury is seldom given in such a Manner as to produce violent Secretions by the salivary Glands; it is to be considered as a Gleet of these Parts.

1753. Gargles prepared with Peruvian Bark, Gargles of Opium, Sea bathing & good Air are beneficial. Dr Mead used to recommend Tincture of Cantharides which may be tried.

1754. Sometimes the alveolar Processes of the Teeth becoming diseased, may be a Cause of keeping up the spitting, when this happens we cannot hope for a Cure untill Exfoliation has taken Place.

1755. Prevention of the venereal Disease is effected by Applications previous to or immediately after Exposure to Infection.

1756. Applications to be used previous to Exposure are such Substances as will not suffer the venereal Matter to come in Contact with the Skin.

1757. Venereal Matter being immiscible with Oil the Part exposed may be defended by anointing it with the most viscid Oil that can be procured.

1758. Means to be employed after Exposure, are caustic Alkali properly diluted, which will dissolve the venereal Matter, or Goulards Extract of Lead, which is a powerful Coagulator of animal Juices & will coagulate the Virus. A Solution of corrosive Sublimate is also said to have succeeded when other Means have been inefficacious.

The End.

January 23d. 1786 — Edwd. Rigby.

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